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3924 MEADE ST.
DENVER, COLORADO

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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 6 IN SET 172

MERCURY MODELS 2013, 2080 (Ch. 150-2) 2113, 2115 (Ch. 150-11, -81) 2116, 2117 (Ch. 150-81) 2401 (Ch. 150-5, -51) 4120 (Ch. 150-2) 4320 (Ch. 150-2, -15) 4421 (Ch. 150-81).

	Later production changes and chassis additions to the Mercury 150 series, covered in Photofact Folder 6 in Set 172, are as follows:
Ch. 150-1	Chassis 150-1 is identical to Ch. 150-11, -81 covered in Photofact Folder 6 in Set 172, except that a pentode standard coil tuner and a 21AP4 picture tube are used.
Ch. 150-6, 150-15	Chassis 150-6 and 150-15 are identical to Ch. 150-2 except a 20HP4 or 20MP4 electrostatic focus picture tube is used. When these tubes are used, pins 6 and 10 of the picture tube are connected to the 440 volt B+ boost at the junction of C3 and R87.
Ch. 150-9, 150-16, 150-17	Chassis 150-9, 150-16, 150-17 are identical to Chassis 150-2 except a 17" electrostatic focus picture tube (17HP4) is used. When this tube is used pin 10 is connected to the 260 volt source and pin 6 is connected to the 440 volt B+ boost as above.
Ch. 150-21	Chassis 150-21 is electrically identical to Ch. 150-2 except a standard coil cascode tuner is used. Later production changes are as follows:
Serial No. 39, 829 & up	Terminal #1 of the R46—C56 couplate was connected to the junction of R48 and T6 instead of 260 volts.
Serial No. 46, 265 & up	The horizontal linearity coil (L21) and C78, connected across it, were omitted.
Serial No. 46, 890 & up	C83 and C84, connected across the primary of the power transformer (T1) were omitted.
Serial No. 47, 611 & up	A 220MMF capacitor was added from pin 7 of V6 (12AX7 noise balancing tube) and ground.
Serial No. 57, 858 & up	In all 21" and 24" receivers, in order to suppress "ringing" or the appearance of light and dark bars on the left portion of the raster , the following changes were made: The linearity coil (L21) and C78, the capacitor across it, were removed as above. C79 was removed from terminals 1 and 4 of T3 and reconnected from Terminal #3 to Terminal #7. A partial schematic of the revised circuit is shown on reverse side.

(Continued on Reverse Side)

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 4 IN SET 186

CROYDON MODELS C17FTM, C21FCM, C21FTM

In later production of Croydon models C17FTM, C21FCM and C21FTM the following changes were made.

C40, sync. coupling capacitor, was changed from 2000MMF to .05MFD.

R56, AFC feedback filter resistor, was changed from 4700Ω to 2700Ω.

R69, horiz. output cathode resistor, was changed from 47Ω to 100Ω.

R70, horiz, output screen resistor, was changed from 20KΩ to 30K.

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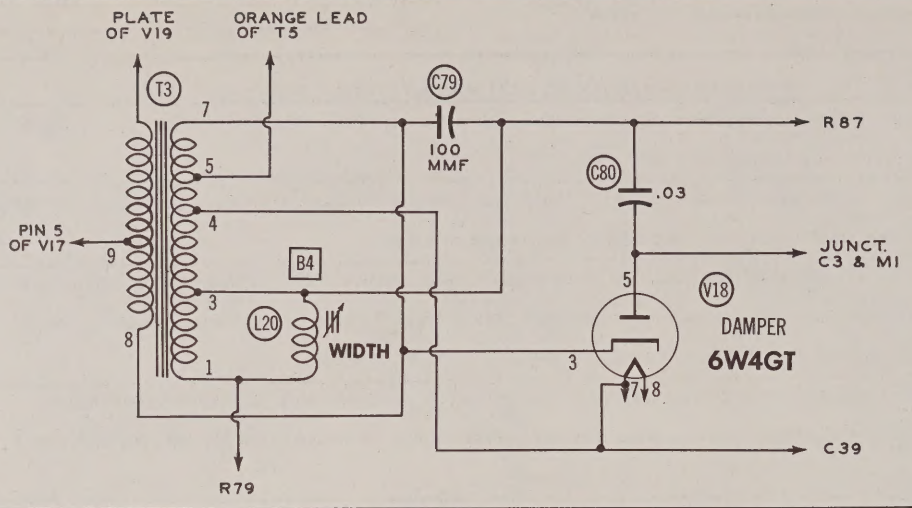

The following is a listing of Chassis, with tuner and picture tube used in each.

CHASSIS	PICTURE TUBE	TUNER TYPE
150-1	21AP4	Pentode Standard Coil
150-2	20CP4	Pentode Standard Coil
150-5	24AP4	Pentode Standard Coil
150-6	20MP4 or 20HP4	Pentode Standard Coil
150-9	17HP4	Pentode Standard Coil
150-11	21AP4	Cascode Standard Coil
150-15	20MP4 or 20HP4	Cascode Standard Coil
150-21	20CP4	Cascode Standard Coil
150-51	24AP4	Cascode Standard Coil
150-81	21MP4	Cascode Standard Coil

Some Models may use more than one chassis. The following is a breakdown of chassis and Models used.

MODEL NO.	CHASSIS USED
2013	150-2
2080	150-2
2113, 2115	150-11, 150-81
2116, 2117	150-81
2401	150-5, 150-51
4120	150-2
4320	150-2, 150-15
4421	150-81

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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 9 IN SET 179

	In addition to the Models covered in Photofact Folder 9 in Set 179 the following new models have been added which use Philco RF-IF Ch. 71 and Deflection Ch. G1, 53-T1852-L, 53-T2125, -L and 53-T2152-L. In later production the following changes were made.
RF Ch. 71 Runs 6 & 7	Production changes in Ch. 71 through Run 7 were covered in Photofact Folder 9 in Set 179.
RF Ch. 71 Run 8	TO INCREASE CAPACITANCE REQUIRED TO PEAK 47.25MC TRAP The value of C30 was changed from .5 to 3MMF to 1 to 5MMF. TO IMPROVE SYNC PERFORMANCE Bias on the 6BF6 tube (V12) was changed by removing R72 from the junction of R74 and R78 and reconnecting it to the junction of R77, R78, C76 and C77.
RF Ch. 71 Run 9	TO PROVIDE FOR VERTICAL RETRACE SUPPRESSION A lead was added in the chassis interconnecting cable between pin 10 of the chassis interconnecting plug and the picture tube cathode.
RF Ch. 71 Run 10	TO IMPROVE VIDEO AMPLIFIER OPERATION R45 changed from 1.2 megohms to 680K.
RF Ch. 71 Run 11	TO IMPROVE PICTURE TUBE CUTOFF R51, picture tube cathode resistor, changed from 120K, ½ watt to 100K, ½ watt. R53, picture tube cathode resister changed from 82K, 1 watt, to 68K, 1 watt.
RF Ch. 71 Run 12	TO IMPROVE FREQUENCY RESPONSE L27, video detector peaking coil, changed from 180 microhenries to 220 microhenries.
RF Ch. 71 Run 13	TO REDUCE SOUND BUZZ AND BEAT IN PICTURE R58, V9 screen resistor, changed from 12K, 1 watt to 33K, 1 watt. Screen supply reduced by disconnecting R58 from point D and reconnecting it to point C . C60, V9 screen bypass capacitor was removed. R57, V9 plate resistor was removed.
RF Ch. 71 Run 14	TO IMPROVE FRINGE-AREA PERFORMANCE A 120K, ½ watt, resistor was added between pins 5 and 6 of V12, noise limiter tube, to lug 4 of the video test socket. COMPONENT CHANGE C39, second Video IF trimmer capacitor was changed to part #31-6520-10 . The value remains 1 to 5MMF.

PHILCO MODELS 52-T1802, 52-T1821, 52-T1822, 52-T2120, 52-T2150-W, 52-T2151, -L, 52-T2252, 53-T1824, 53-T1825, 53-T1826, 53-1852, -L, 53-T2125, -L, 53-T2152, -L (Code 124)(Ch. 71, G-1)

(Continued on Reverse Side)

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 9 IN SET 181

	The following changes were made in later production of Philco RF-IF Chassis 44 and Deflection Chassis D-4 covered in Photofact Folder 9 in Set 181.
RF Ch. 44 Run 3	TO IMPROVE SYNC PERFORMANCE R86, the first sync separator cathode resistor, was changed from 10K to 4700Ω. R93 was changed from 1.2 megohms to 1 megohm. R88 changed from 180K to 240K. R87 changed from 47K to 220K. C82 was removed from the plate of V13 (Pin 1) and reconnected between the junction of R90 and R93 and ground. COMPONENT CHANGE R83 was changed from 1550Ω, 11 watts to 1500Ω, 12 watts.
RF Ch. 44 Run 4	TO IMPROVE PERFORMANCE IN NOISY SIGNAL AREAS R93 changed from 1 megohm to 1.2 megohms. TO CENTER RANGE OF VARIABLE PEAKING COIL L29, first video amp. shunt peaking coil changed from 220 Microhenries to 180 Microhenries (Part #32-4480-9). C59, first video amp. cathode by-pass capacitor, changed from .0047MFD to .0033MFD. TO ELIMINATE SHOCK HAZARD Two 470MMF capacitors added between L2 and L3 and the antenna terminals. R8 changed to 1 Megohm.

PHILCO MODELS 52-T1882, 52-T1883 (Code 121) 52-T2145X (Code 125), 52-T2182, 52-T2245, 52-T2253, 52-T2282, 52-T2283, (Code 121) (Ch. 44, D-4, A)

(Continued on Reverse Side)

PHILCO MODELS 52-T1802, 52-T1821, 52-T1822, 52-T2120, 52-T2150-W, 52-T2151, -L, 52-T2252, 53-T1824, 53-T1825, 53-T1826, 53-1852, -L, 53-T2125, -L, 53-T2152, -L (Code 124)(Ch. 71, G-1)

Defl. Ch. G-1 Run 4	TO REMOVE HORIZONTAL FOLDOVER A 27K resistor was inserted in series with R106 to the junction of C86 and C87. A 82MMF capacitor was added from the junction of the 27K resistor and R106 to ground.
Defl. Ch. G-1 Run 5	TO RECENTER HORIZONTAL - OSCILLATOR FREQUENCY CONTROL The value of R103 was changed from 390K to 330K.
Defl. Ch. G-1 Run 6	TO IMPROVE INTERLACE C83 and C84 were interchanged. C82 was changed from .033MFD to .022MFD. R94 was changed from 8200Ω to 3300Ω. R91 was changed from 220K to 180K. (Note: These changes apply to Run 6 only.)
Defl. Ch. G-1 Run 7	TO IMPROVE VERTICAL LINEARITY A 680Ω resistor was added between the junction of R95 and C85 and the center terminal of the vertical linearity control (R6).
Defl.Ch. G-1 Run 8	TO IMPROVE HORIZONTAL SYNC PERFORMANCE C92, horizontal oscillation grid blocking resistor, was removed and reconnected between the green lead of the horizontal oscillation coil (L35) and pin 4 (grid) of V15. The white lead is now connected directly to ground.
Defl. Ch. G-1 Run 9	TO PROVIDE FOR VERTICAL RETRACE SUPPRESSION A .022MFD capacitor was added from pin 11 of the yoke socket to pin 10 the chassis interconnecting socket.
Defl. Ch. G-1A Run 9	Chassis marked G-1A signifies that a 500K untapped volume control is used in place of the 2 megohm tapped control. When this control is used R71 and C67 (Bass Compensation) are omitted.
Defl. Ch. G-1 Run 9P & 10	TO REMOVE VERTICAL WHITE LINES FROM PICTURE R109, 220K resistor, was removed. R108 was changed from 2.2 megohms to 680KΩ.

PHILCO MODELS 52-T1882, 52-T1883 (Code 121) 52-T2145X (Code 125), 52-T2182, 52-T2245, 52-T2253, 52-T2282, 52-T2283 (Code 121) (Ch. 44, D-4, A)

RF Ch. 44 Run 5	TO PROVIDE FOR VERTICAL RETRACE SUPPRESSION A lead was added between pin 10 of the chassis interconnecting plug and the picture tube cathode. COMPONENT CHANGE C70, ratio detector by-pass capacitor, changed from 390MMF mica to 330MMF ceramic type capacitor. TO IMPROVE PICTURE TUBE CUTOFF R57, picture tube cathode resistor, changed from 120K, 1/2 watt to 100K, 1/2 watt. R59, picture tube cathode resistor, changed from 82K, 1/2 watt to 68K, 1 watt.
RF Ch. 44 Run 6	TO IMPROVE STRONG-SIGNAL LOW PERCENTAGE SYNC PERFORMANCE R88, noise limiter divider resistor changed from 240K to 180K.
Defl. Ch.D-4A Run 2	DEFLECTION SOCKET REWIRED The wire connected to pin 9 of the deflection socket was removed and Pin 9 connected to pin 10. When this change was made the chassis designation was changed to D-4A.
Defl. Ch.D-4A Run 3	TO PREVENT PARASITIC OSCILLATION A 330Ω resistor was added in series with the grid of the vertical output tube V15 (6BG6GT). TO IMPROVE PERFORMANCE R137, filament dropping resistor, changed to .24Ω, 5 watts (Part #33-348-17). TO ELIMINATE VERTICAL OUTPUT TRANSFORMER BUZZ R107 removed and added across the secondary of the vertical output transformer (T4). When this change is made C90 is returned directly to ground.

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ADMIRAL
CHASSIS 5A3

ADMIRAL MODEL 5A32/16

TRADE NAME	Admiral Models 5A32/12, 5A32/15, 5A32/16, 5A33/12, 5A33/15, 5A33/16 (Ch. 5A3)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois
TYPE SET	AC Operated Superheterodyne Receiver With Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rect.
POWER SUPPLY	110-120 Volts AC-25~, 50~, 60~ RATING .26 Amp. @ 117 Volts AC-60~
TUNING RANGE—BROADCAST	540-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use and insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	250MMF	High side to stator, rear section of tuning gang. Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output.
2.	"	"	1620KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

Turn tuning gang fully closed and set pointer at the "5" on the low frequency end of dial circle.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	70	150	67A17-1	PRS150/50-		BBRD8415		3N534	TVA-2460	Red
B	30	150		50						Yellow
C2	4	150	67A4-2	PRS150/4		BR415		TC40	TVA-1402	Note 1
C3	56	500		1469-00005		5R5Q5		MCB225	MS-45	Note 2
C4	.05	400	64B1-22	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C5	.1	200	64B1-30	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C6	220		65C6-80	SI220	D6-221	5W5T25	GP2K-221	UC-5322	5GA-T22	
C7	.01	400	64B1-25	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C8A	.005									
B	250		♦63A5-4		♦PC-70		♦1406-01		♦104C4	
C										
C9	.02	400	64B1-24	P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C10	.047	400	65A13-5	489ZGXY-05		PJ4S5		PT4147	4TM-S47	
C11	.1	200	64B1-30	P288-1		PJ2P1		PT401	2TM-P1	

Note 1. Late production models use .25MFD in this application (Part No. 64B1-28).
Note 2. Some models use 47MMF in this application (Part No. 65C6-79).
♦ Items C8A, C8B, C8C, R6A, R6B are combined in one unit. When replacing items separately, C8B and C8C should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	75B1-41	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A.
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	NOTES
R2	22KΩ	½	60B8223	BTS-22K	
R3	100Ω	½	60B8101	BTS-100	
R4	1Meg	½	60B8105	BTS-1Meg	
R5	4.7Meg	½	60B8475	BTS-4.7Meg	
R6A	500KΩ	½	■63A54		
B	500KΩ	½			

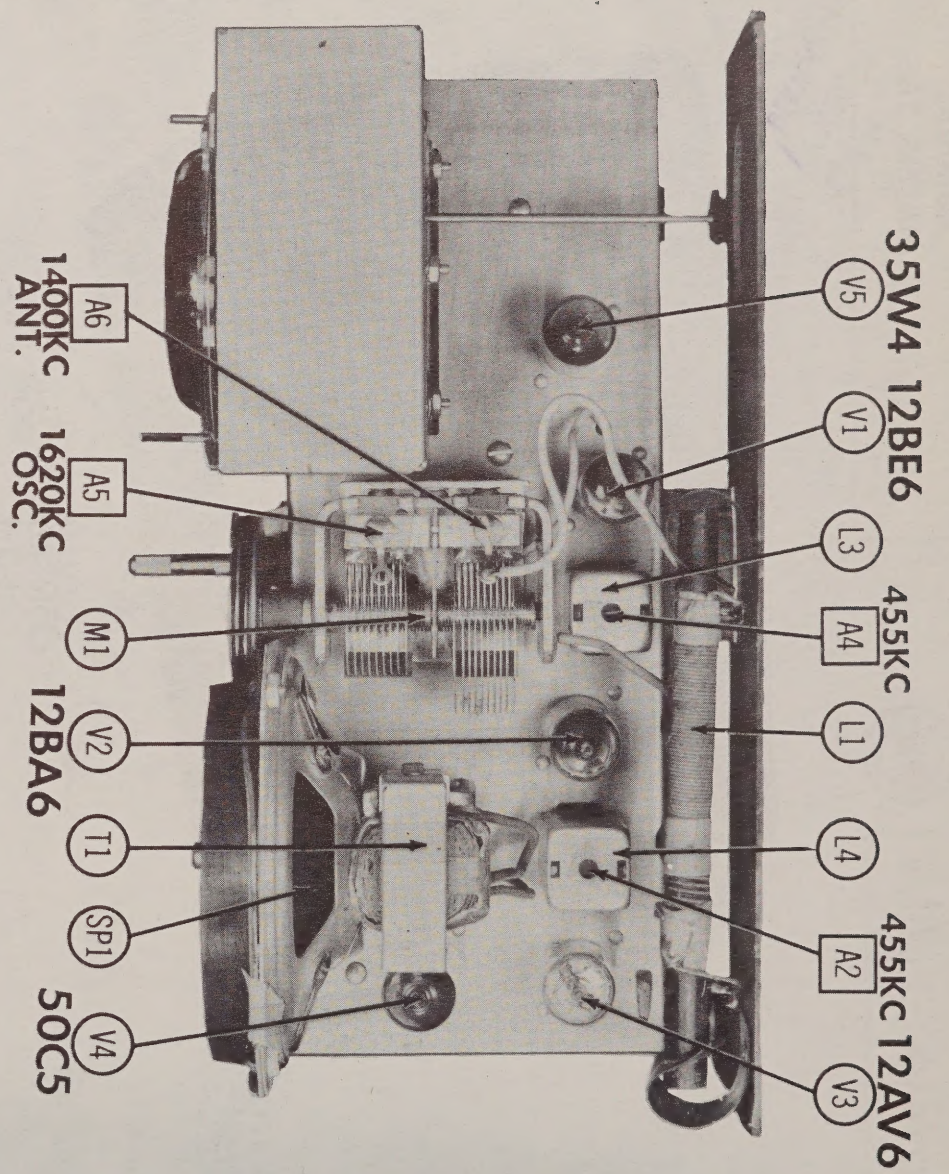
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: PART No.	IRC PART No.	NOTES
R7	47KΩ	½	60B8473	BTS-47K	
R8	150Ω	½	60B8151	BTS-150	
R9	560Ω	2	60B20561	BTB-560	
R10	33Ω	1	60B283		

■ Items R6A, R6B, C8A, C8B, C8C are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2.18KΩ	3.3Ω	179Ω	.64Ω	Part of speaker.	A-3876 ①	A-2928 ①	R0-2 ①	S-2X ①	① Bend mounting tabs down, file out slots, mount on original mounting slots.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

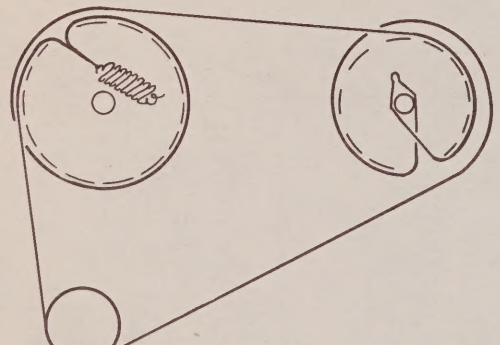
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ADMIRAL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.3Ω	78B72-1	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	ADMIRAL PART No.	MERIT PART No.	
L1	Loop Ant.	.2Ω		69C 156		
L2	Osc. Coil	6.5Ω		69A 52-4		Tapped@5.8Ω
L3	Input IF	17.5Ω	17.5Ω	72B 28-7	BC-352	
L4	Output IF	17.5Ω	17.5Ω	72B 28-7	BC-353	

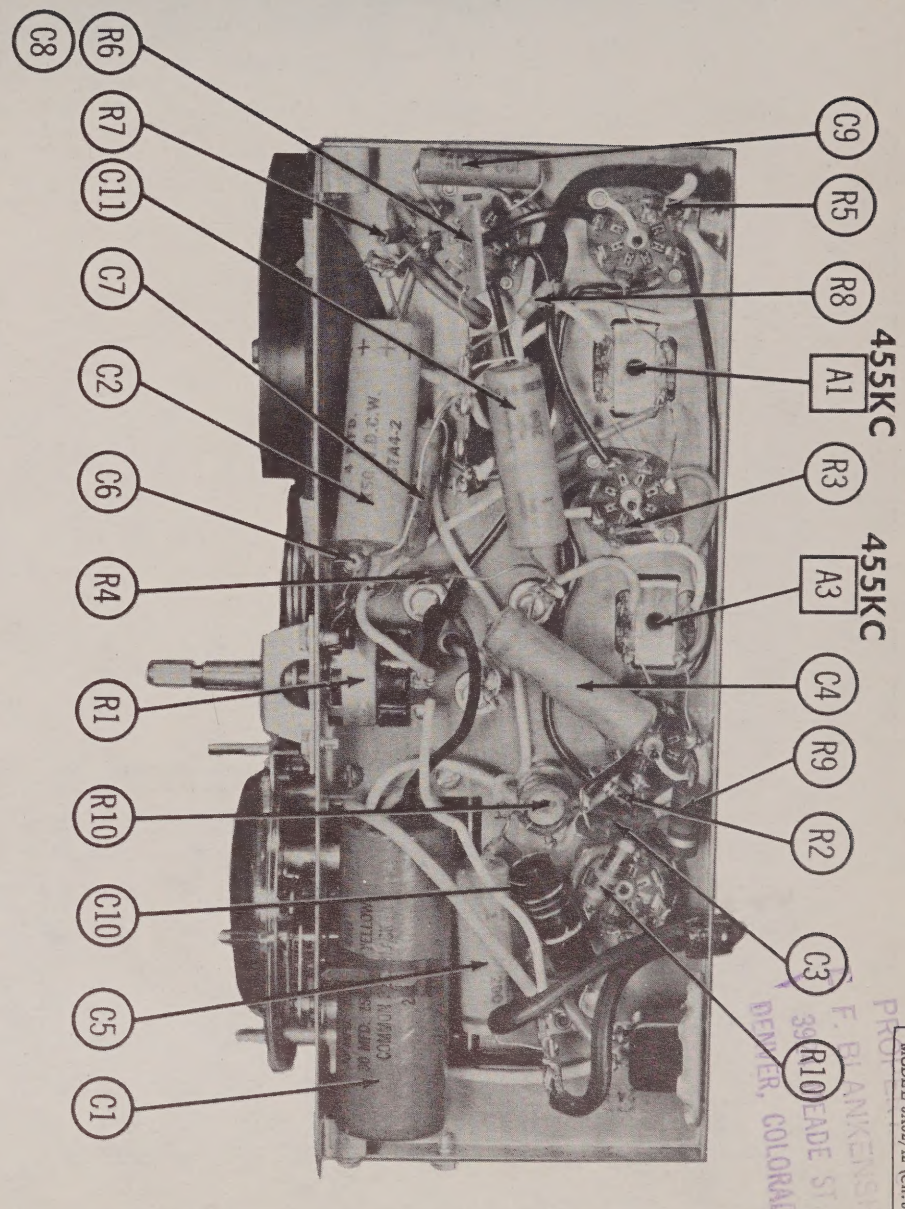
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M1	Tuning Capacitor	68B 39	24-320MMF, 17-134MMF
	Clock	91C 7-1	Complete, (60 Cycles)
	Clock	91C 7-2	Complete, (50 Cycles)
	Clock	91C 7-3	Complete, (25 Cycles.)
	Field and Coil Assy.	91C 4-15	60 Cycles
	Field and Coil Assy.	91C 4-17	50 Cycles.
	Field and Coil Assy.	91C 4-19	25 Cycles.
	Knob	91C 7-11	Clock (3 used) Modesl 5A32/12, 5A32/15 and 5A32/16
	Knob	91C 7-12	Clock (3 used) Models 5A33/12, 5A33/15 and 5A33/16
	Knob	33D 55-3	OFF/ON Volume, Models 5A32/12, 5A32/15 and 5A32/16
	Knob	33D 55-23	Tuning Models 5A32/12, 5A32/15 and 5A32/16
	Knob	33D 55-27	OFF/ON Volume, Models 5A33/12, 5A33/15 and 5A33/16
	Knob	33D 55-26	Tuning Models 5A33/12, 5A33/15 and 5A33/16
	Pointer & Hub Assy.	A3732	Models 5A32/12, 5A32/15 and 5A32/16
	Pointer & Hub Assy.	A3733	Models 5A33/12, 5A33/15 and 5A33/16
	Cabinet	34D 56-2	Mahogany, Models 5A32/12, 5A32/15 and 5A32/16
	Cabinet	34D 56-3	Ivory, Models 5A33/12, 5A33/15 and 5A33/16



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



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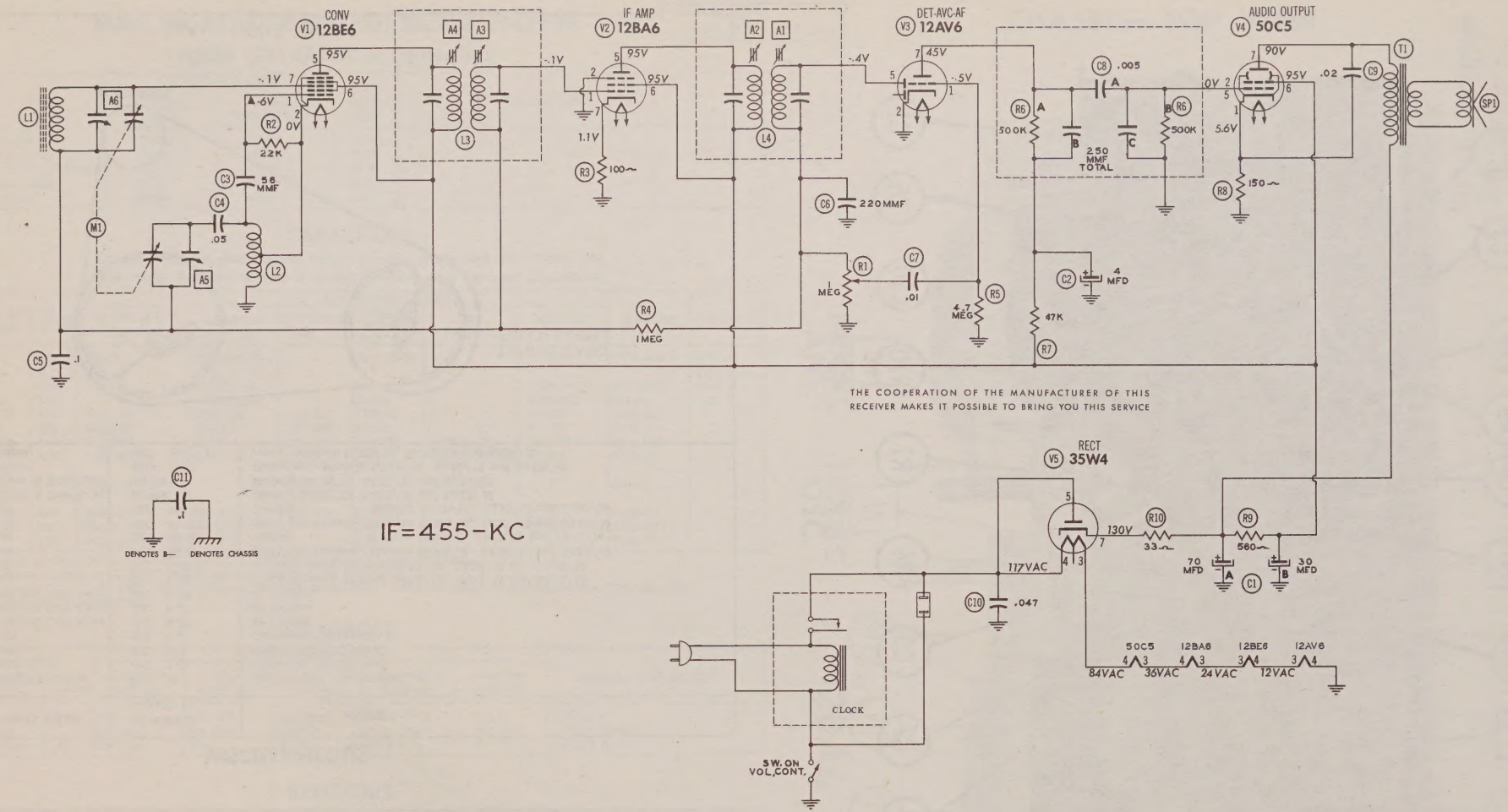

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.7Ω	24Ω	12Ω	† 610Ω	† 593Ω	2Meg
V 2	12BA6	2Meg	0Ω	24Ω	36Ω	† 610Ω	† 593Ω	100Ω
V 3	12AV6	4.7Meg	0Ω	12Ω	0Ω	1Meg	INF	† 547KΩ
V 4	50C5	150Ω	500KΩ	36Ω	84Ω	500KΩ	† 593Ω	† 772Ω
V 5	35W4	† 33Ω	INF	84Ω	117Ω	117Ω	109Ω	140KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER.
† MEASURED FROM PIN 7, V5.
FILAMENT RESISTANCE MEASUREMENTS TAKES WITH "OFF/ON" SWITCH IN "OFF" POSITION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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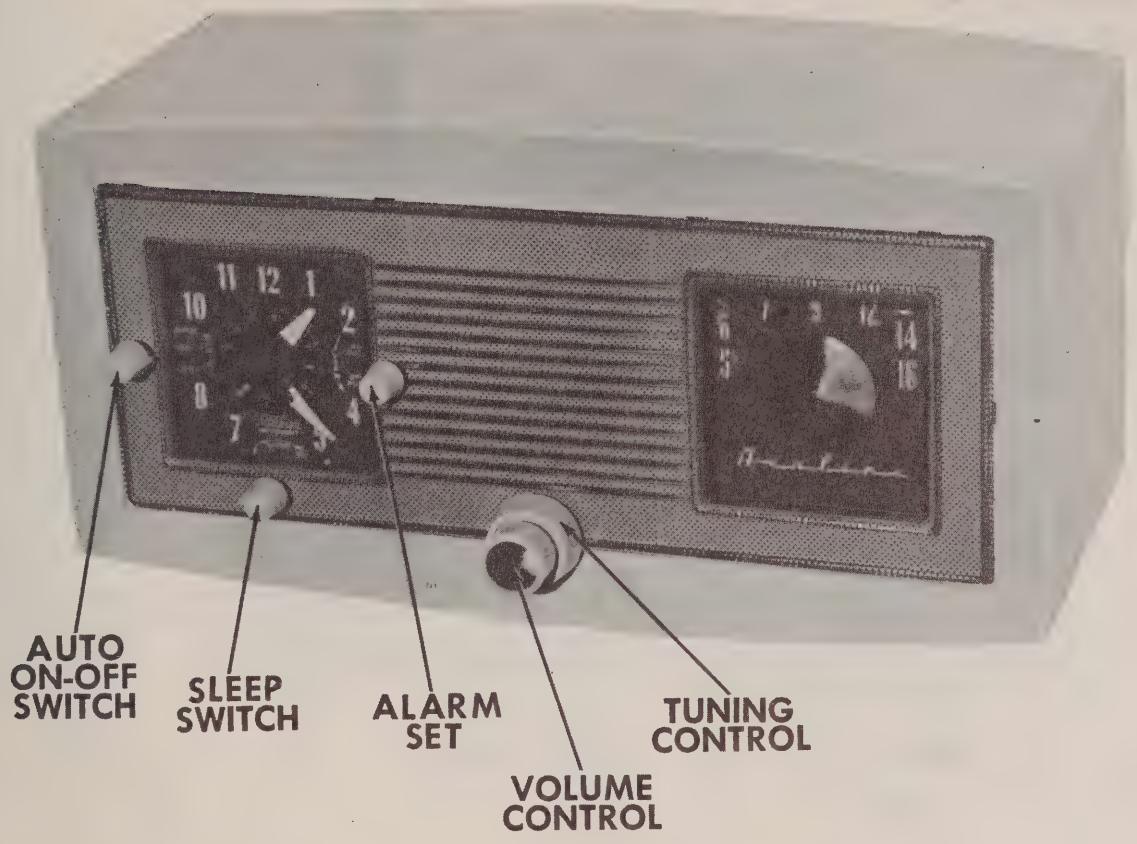
191-2

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AIRLINE MODELS
15BR-1548A, 15BR-1549A, 25BR-1548A, 25BR-1549B



AIRLINE MODELS
15BR-1548A, 15BR-1549A, 25BR-1548A, 25BR-1549B

AIRLINE MODEL 25BR-1549B

TRADE NAME	Airline Models 15BR-1548A, 15BR-1549A, 25BR-1548B, 25BR-1549B
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Four)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 or 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output

POWER SUPPLY 105-115 Volts AC-60 Cycle RATING .26 Amp. @ 115 Volts AC
TUNING RANGE—BROADCAST 540-1600 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator of front section of tuning gang. Low side to B-.	455 KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1620 KC	"	"	A5	"
3.		Loop	1400 KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

AIR LINE
MODEL 15BR-1548A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		AIRLINE PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3A	Det-AVC-AF Amp	12AV6	12AV6	7BT	
B	Det-AVC-AF Amp	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■50	150	8C-15262	AFH2-15		B015		FP213	TVL-2432	
B	▲30	150								
C2	.05	200	8D-14460	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3A	220									
B	.005									
C	.005		♦201-19303		♦PC-151		♦1408-02		♦103C5	
D	250									
E										
C4	.01	200	8D-17258	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C5	.047	400	8J-16081	489ZXP-05		PJ4S47		PT4147	4TM-S47	
C6	.18	400	8D-11111							

♦ Items C3A, C3B, C3C, C3D, C3E, R5A, R5B, R5C are combined in one unit. When replacing items separately, C3D and C3E should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1	1 Meg	½	10B-19797					Volume

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	AIRLINE PART No.	IRC PART No.	
R2	47KΩ	½	9B1-82	BTS-47K	
R3	150Ω	½	9B1-52	BTS-150	
R4	2.2Meg	½	9B1-33	BTS-2.2Meg	
R5A	6.8Meg	½		BTS-6.8Meg	
B	470KΩ	½	♦201-19303	BTS-470K	
C	470KΩ	½		BTS-470K	

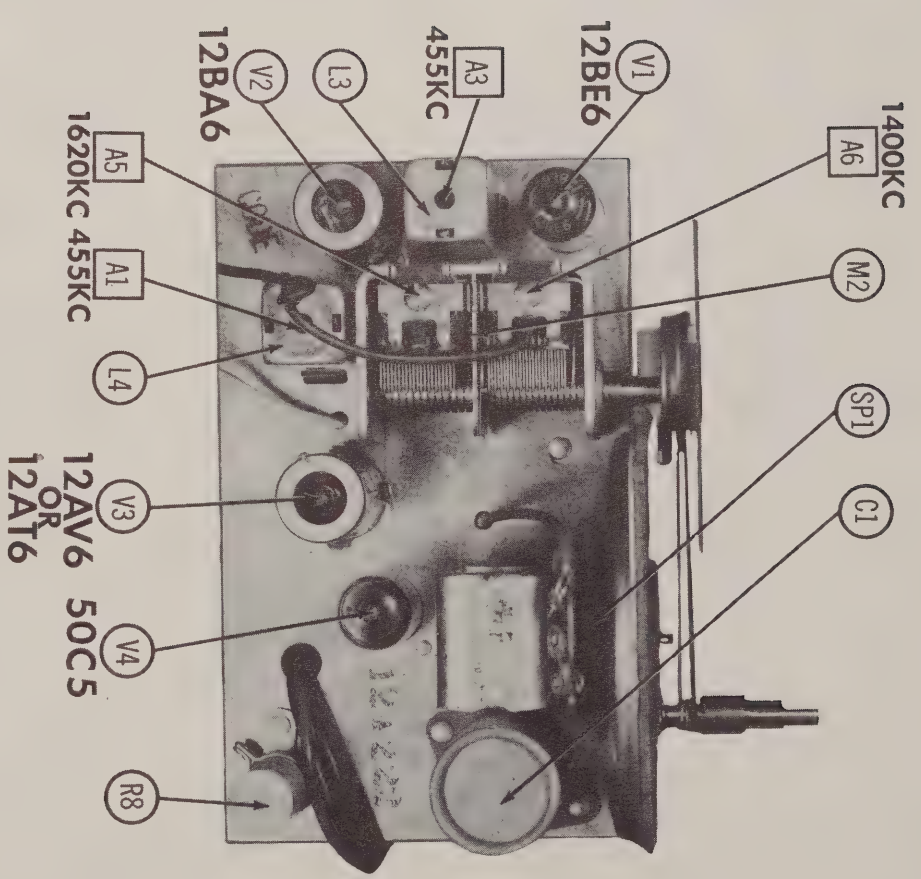
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PART No.	IRC PART No.	
R6	150Ω	½	9B1-52	BTS-150	
R7	1200Ω	2	9B4-63	BTB-1200	
R8A	195Ω	10	9M-19778		
B	50Ω				
R9	220KΩ	½	9B1-27	BTS-220K	

♦Items R5A, R5B, R5C, C3A, C3B, C3C, C3D, C3E, are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		AIR LINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2KΩ	3.2Ω	165Ω	.47Ω	12C17595-1	A-3332	A-3025	RO-2 ①	S-2X ①	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.2Ω	18A19739	ST-113 Mod. P4-X		

COILS (RF-IF)

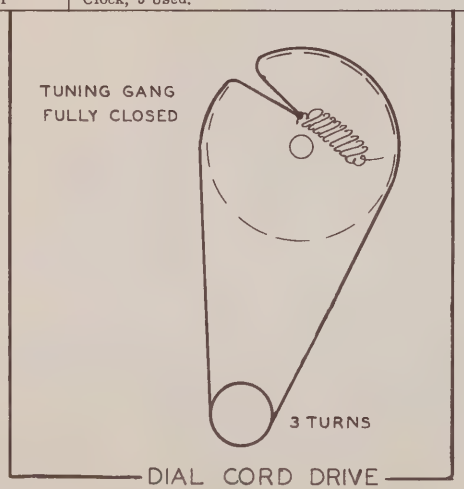
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	AIRLINE PART No.	MERIT PART No.	
L1	Loop Ant.	0Ω	3.4Ω	13E-20330		
L2	Osc. Coil	.7Ω	5.5Ω	13D-19064		
L3	Input IF	15Ω	15Ω	13B-17731	BC-352	
L4	Output IF	15Ω	15Ω	13B-17731	BC-353	

SELENIUM RECTIFIER

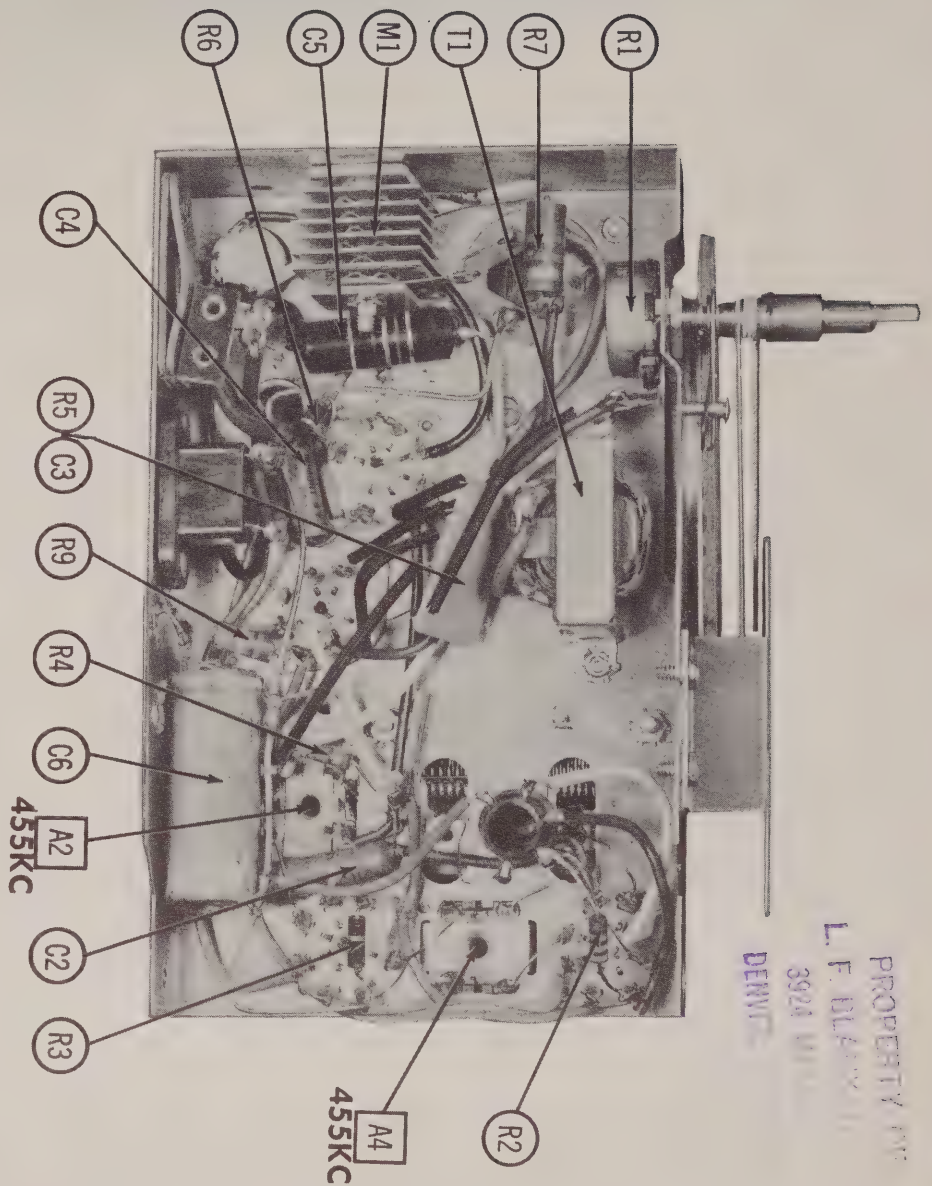
ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT	AIRLINE PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	
M1	.058A	21J19594	NC-5	5M4	1002A	6S65	

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M2	Tuning Capacitor	8A-19470	38-455MMF, 30-164MMF.
	Cabinet	R5C-19734-87	Ivory, Models 15BR-1549A, 25BR-1549B.
	Cabinet	R5C-19734-86	Mahogany, Models 15BR-1548A, 25BR-1548B.
	Knob	5B-19794-88	Volume, Models 15BR-1549A, 25BR-1549B.
	Knob	5B-19795-88	Tuning, Models 15BR-1549A, 25BR-1549B.
	Knob	5B-19794-74	Volume, Models 15BR-1548A, 25BR-1548B.
	Knob	5B-19795-74	Tuning, Models 15BR-15448A, 25BR-1548B.
	Escutcheon	2F-20308	
	Dial Glass	6A-20309	
	Dial Pointer	2G-20329	
	Clock Assembly	21M-20203	
	Knob	200-20357-1	Clock, 3 Used.



CHASSIS—BOTTOM VIEW



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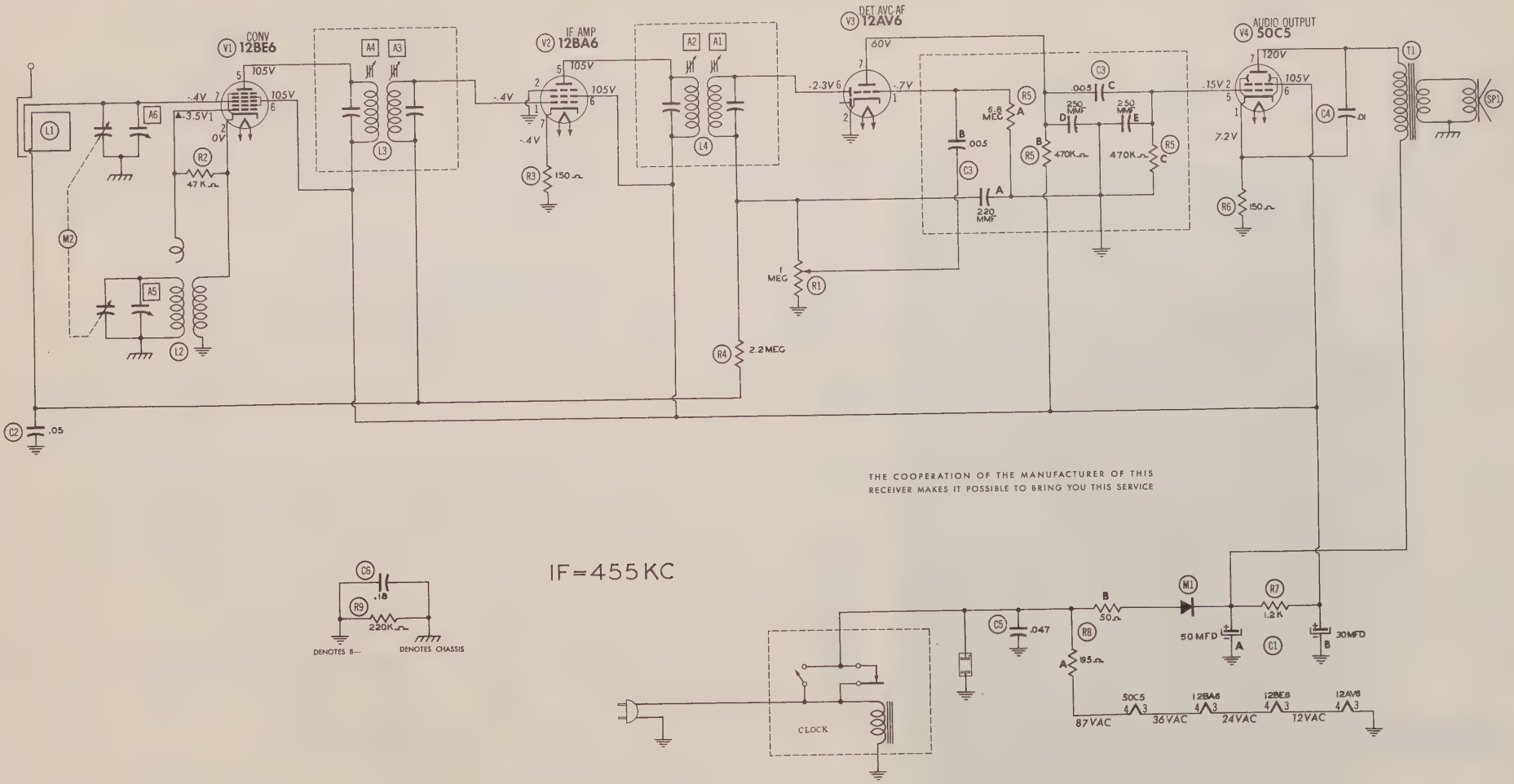
L. F. BLAKY
3924
DENNI

AIRLINE
MODEL 15BR-1548A



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

IF=455KC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	47KΩ	.7Ω	12Ω	24Ω	†1.2KΩ	†1.2KΩ	3.2Meg
V 2	12BA6	3.2Meg	0Ω	24Ω	36Ω	†1.2KΩ	†1.2KΩ	150Ω
V 3	12AV6	6.8Meg	0Ω	0Ω	12Ω	INF	1 Meg	†470KΩ
V 4	50C5	150Ω	470KΩ	36Ω	88Ω	470KΩ	†1.2KΩ	†165Ω

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM OUTPUT OF M1
NOTE. FILAMENT RESISTANCE MEASURED WITH CLOCK DISCONNECTED.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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191-3

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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MODEL 9120

AMBASSADOR MODELS 21C2A, 21C2ALO, 9120, LO, 9820, 9821, LO

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DATE 1–53 SET 191 FOLDER 4

PHOTOFACT* Folder
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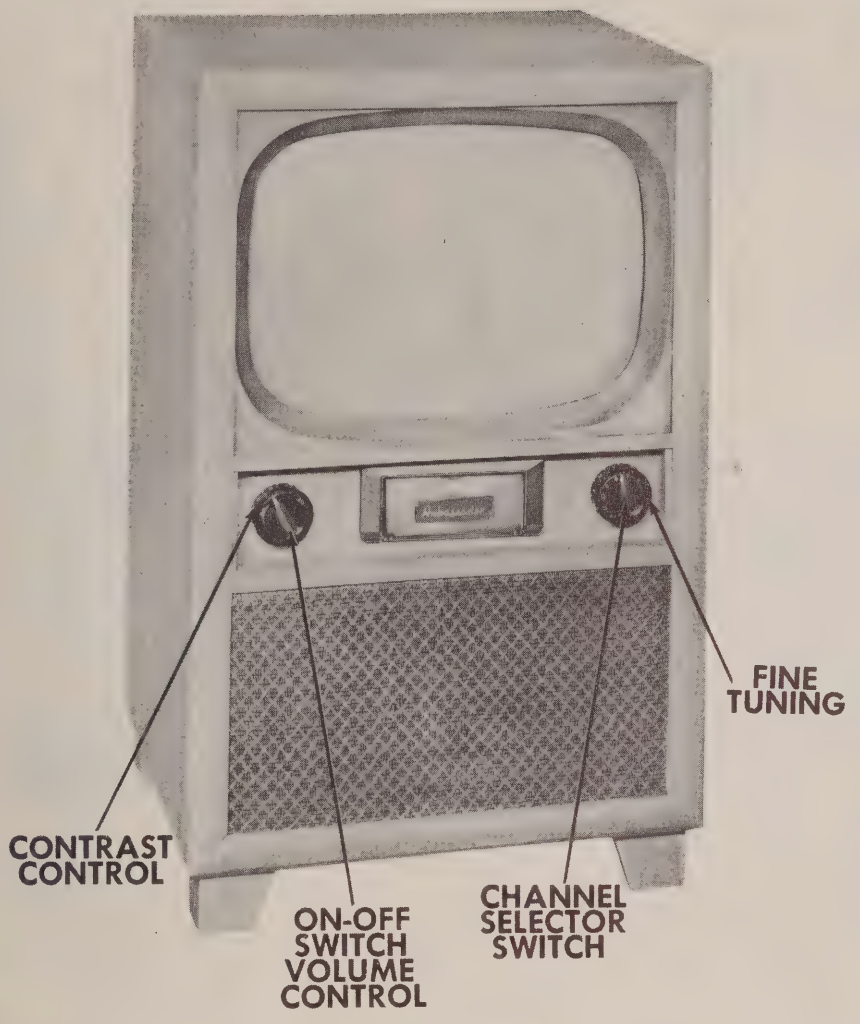
3924
DENVER



AMBASSADOR MODELS 21C2A, 21C2ALO, 9120, LO, 9820, 9821, LO

TRADE NAME	Ambassador Models 21C2A, 21C2AL0, 9120, 9120L0, 9820, 9821, 9821L0
MANUFACTURER	Allied Pur. Corp., 401 5th. Ave., New York 16, N.Y.
TYPE SET	Television Receiver
TUBES	Nineteen
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING 1.94 Amp. @ 117 Volts AC
TUNING RANGE-	Channels 2 thru 13

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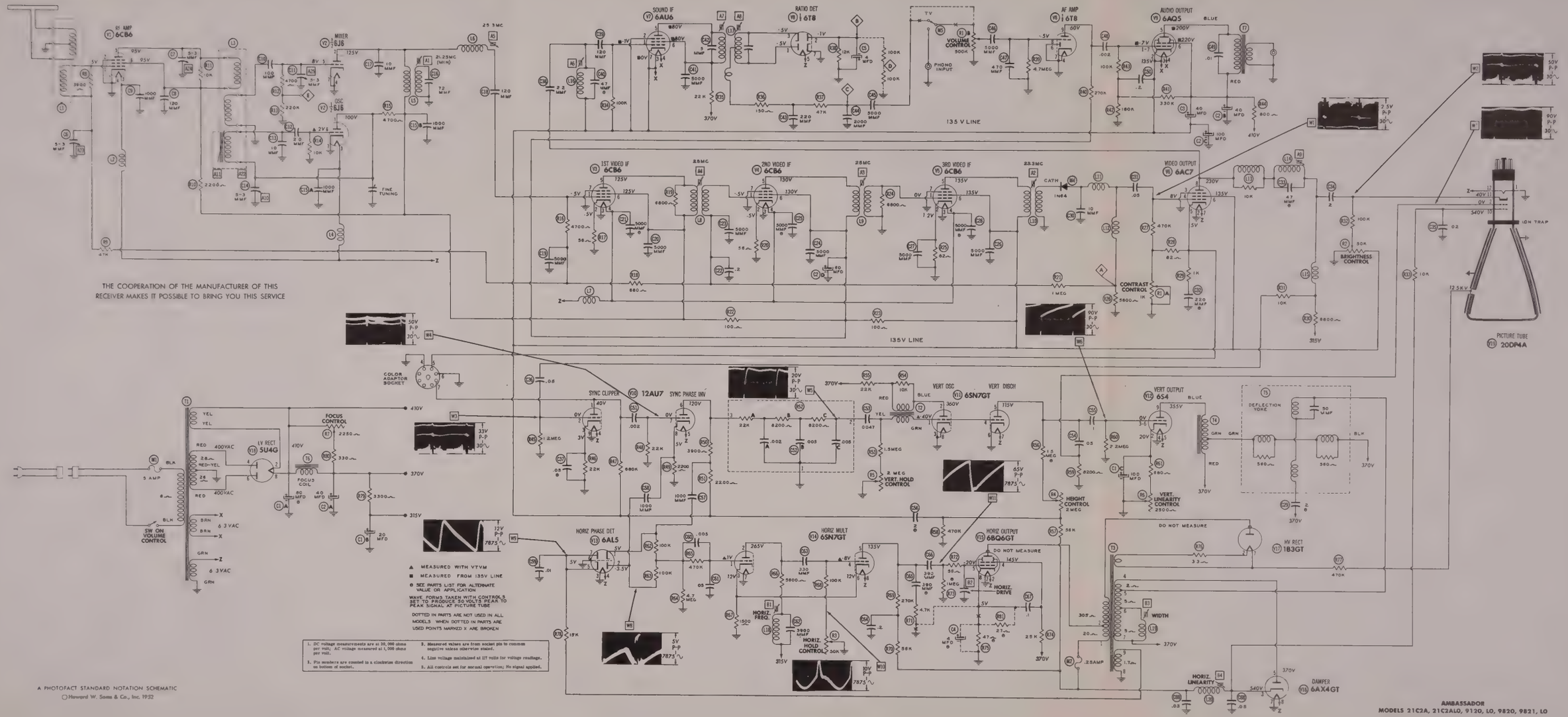
RF AMP
6CB6
MIXER
6J6
OSC
6J6
SOUND IF
6AU6
RATIO DET
6T8
AF AMP
6T8
AUDIO OUTPUT
6AQ5
1ST VIDEO IF
6CB6
2ND VIDEO IF
6CB6
3RD VIDEO IF
6CB6
VIDEO OUTPUT
6AC7
SYNC CLIPPER
12AU7
SYNC PHASE INV
VERT OSC
6SN7GT
VERT DISCH
VERT OUTPUT
6S4
HORIZ PHASE DET
6AL5
HORIZ MULT
6SN7GT
HORIZ OUTPUT
6BQ6GT
LV RECT
5U4G
HV RECT
1B3GT
DAMPER
6AX4GT
PICTURE TUBE
20DP4A
135 V LINE
FOCUS CONTROL
FOCUS COIL
FINE TUNING
VOLUME CONTROL
PHONO INPUT
BRIGHTNESS CONTROL
CONTRAST CONTROL
VERT. HOLD CONTROL
HEIGHT CONTROL
VERT. LINEARITY CONTROL
HORIZ. FREQ.
HORIZ. HOLD CONTROL
HORIZ. DRIVE
WIDTH
HORIZ. LINEARITY
DEFLECTION YOKE
ION TRAP
COLOR ADAPTOR SOCKET
SW ON VOLUME CONTROL
DO NOT MEASURE
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
▲ MEASURED WITH VTVM
■ MEASURED FROM 135V LINE
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 80 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
DOTTED IN PARTS ARE NOT USED IN ALL MODELS WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
1. DC voltage measurements are at 20,000 ohms per volt; AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; No signal applied.
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MODELS 21C2A, 21C2ALO, 9120, LO, 9820, 9821, LO

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CHASSIS TOP VIEW

L...
3924 MEADE
DENVER, COLO...

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

AMBASSADOR
MODELS 21C2A, 21C2A10, 9120, 10, 9820, 9821, 10

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multivibrator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative side of a 3 volt battery to the ungrounded side of C23. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	21.25MC	Any	DC probe to Point A. Low side to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	23.3MC	"	"	A2	Adjust for maximum deflection.
3.	"	"	25MC	"	"	A3, A4	"
4.	"		25.3MC	"	"	A5	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Leave the 3 volt battery connected as before.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to an ungrounded tube shield floating over dummy converter tube.	24MC (10MC swp.)	21.25MC 25.75MC	Any	Vert. amp. to Point A. Low side to chassis.		Check for response curve similar to fig. 1 with video marker at 50%. If necessary readjust A2 thru A5 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from Point B to chassis. The junction of these two resistors is alignment Point D as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.01MFD	High side to Point A. Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point B. Common to chassis.	A6, A7	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to Point C. Common to Point D.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.01MFD	High side to Point A. Low side to chassis.	4.5MC (450KC swp.)	4.5MC	Any	Vert. amp. to Point B. Low side to chassis.	A6, A7	Disconnect stabilizor capacitor C5. Adjust for maximum amplitude and symmetry as per fig. 2.
7.	"	"	"	"	"	Vert. amp. to Point C. Low side to chassis.	A8	Reconnect capacitor C5. Adjust so that 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.01MFD	High side to Point A. Low side to chassis.	4.5MC (unmod.)	Any	DC probe thru crystal diode detector (fig.4) to pin 11 of picture tube. Common to chassis.	A9	Adjust for MINIMUM deflection.

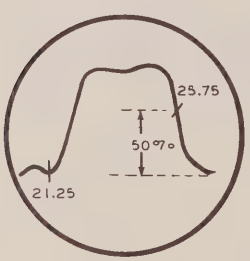


FIG. 1

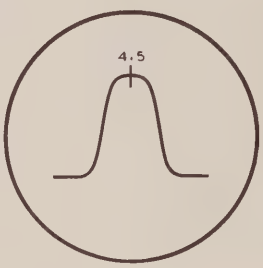


FIG. 2

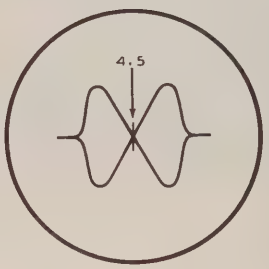


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A10. It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct any individual channel. If adjustment of A10 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.
Remove the dummy converter tube and replace the original 6J6 in its socket.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC swp.)	211.25MC 215.75MC	13	Vert. amp. to Point (A) Low side to chassis.	A11	Adjust to place sound marker in 21.25MC trap notch as in fig. 5. Video marker should be at 50% response.
			207MC (10MC swp.)	205.25MC 209.75MC	12		A12	
			201MC (10MC swp.)	199.25MC 203.75MC	11		A13	
			195MC (10MC swp.)	193.25MC 197.75MC	10		A14	
			189MC (10MC swp.)	187.25MC 191.75MC	9		A15	
			183MC (10MC swp.)	181.25MC 185.75MC	8		A16	
			177MC (10MC swp.)	175.25MC 179.75MC	7		A17	
			85MC (10MC swp.)	83.25MC 87.75MC	6		A18	
			79MC (10MC swp.)	77.25MC 71.75MC	5		A19	
			69MC (10MC swp.)	67.25MC 71.75MC	4		A20	
			63MC (10MC swp.)	61.25MC 65.75MC	3		A21	
			57MC (10MC swp.)	55.25MC 59.75MC	2		A22	

RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC swp.)	205.25MC 209.75MC	12	Vert. amp. thru 47KΩ to Point (E) Low side to chassis.	A23, A24 A25	Adjust for response curve of maximum amplitude and symmetry as per fig. 6 with markers above 90% response.
11.	"	"	213MC (10MC swp.)	211.25MC 215.75MC	13	"		Check all channels for proper response. If markers fall below 70% on any channel make slight compromise adjustments of A23, A24 and A25 on that channel then recheck all other channels to see that they have not been seriously affacted.
			201MC (10MC swp.)	199.25MC 203.75MC	11			
			195MC (10MC swp.)	193.25MC 197.75MC	10			
			189MC (10MC swp.)	187.25MC 191.75MC	9			
			183MC (10MC swp.)	181.25MC 185.75MC	8			
			177MC (10MC swp.)	175.25MC 179.75MC	7			
			85MC (10MC swp.)	83.25MC 87.75MC	6			
			79MC (10MC swp.)	77.25MC 81.75MC	5			
			69MC (10MC swp.)	67.25MC 71.75MC	4			
			63MC (10MC swp.)	61.25MC 65.75MC	3			
			57MC (10MC swp.)	55.25MC 59.75MC	2			

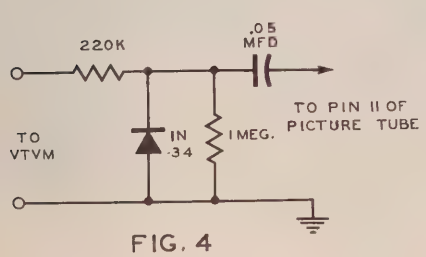


FIG. 4

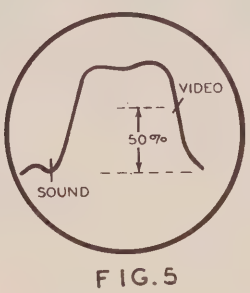


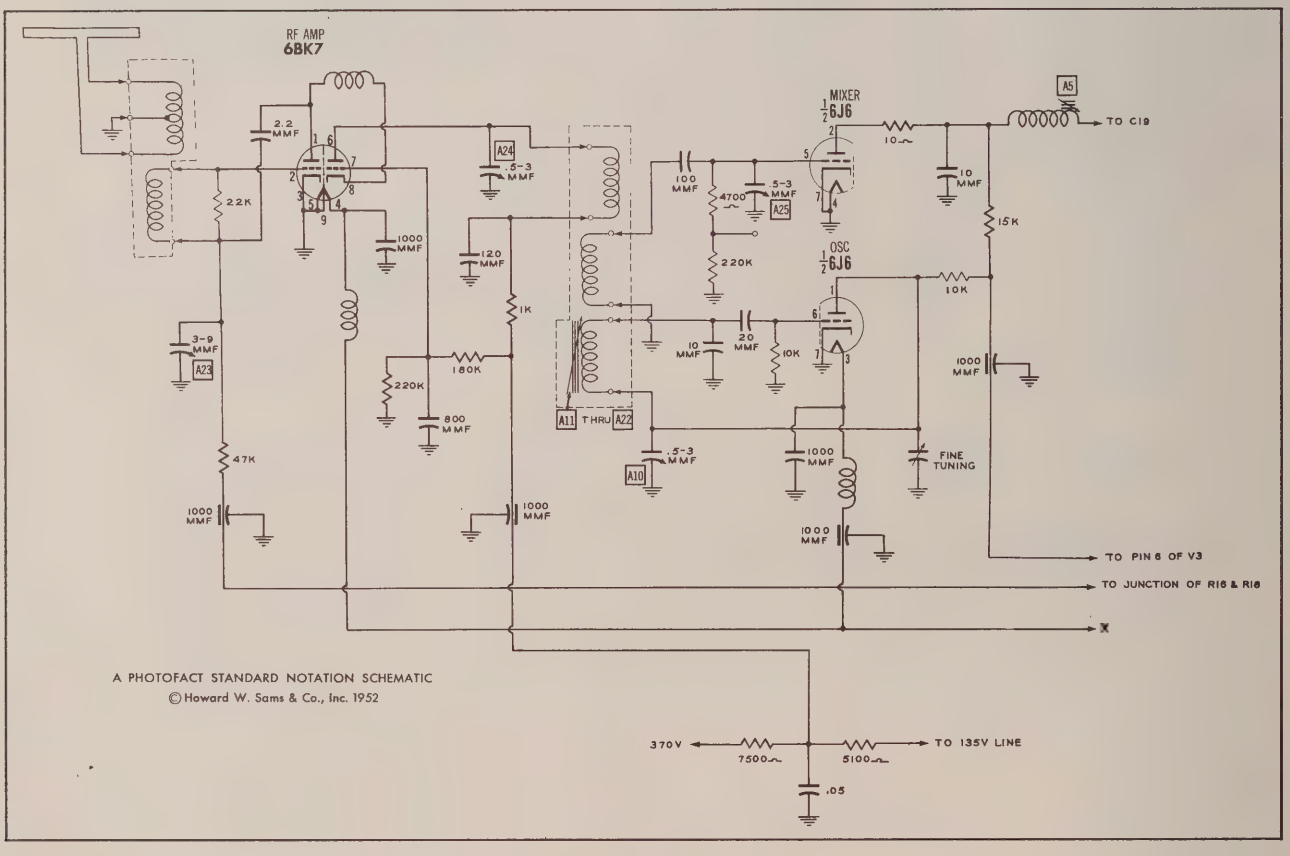
FIG. 5

FIG. 6

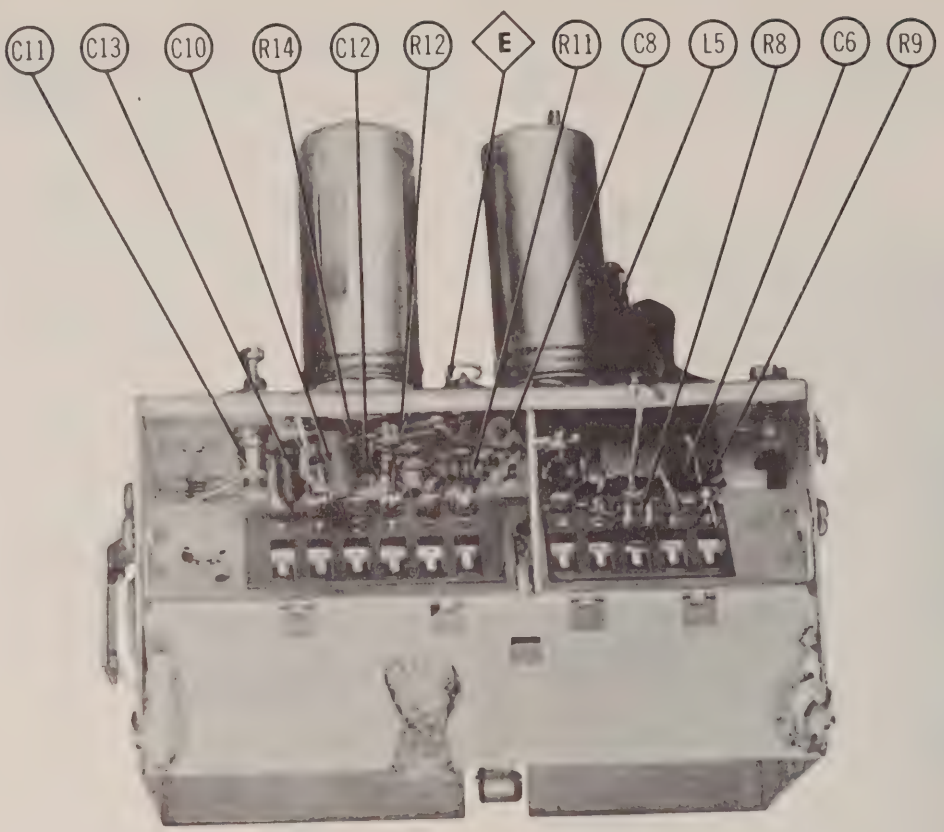
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	1Meg	0Ω	.1Ω	0Ω	■2.4KΩ	■2.4KΩ	0Ω		
V 2	6J6	■4.9KΩ	■200Ω	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6CB6	1Meg	56Ω	0Ω	.1Ω	■200Ω	■200Ω	0Ω		
V 4	6CB6	1Meg	56Ω	0Ω	.1Ω	■100Ω	■100Ω	0Ω		
V 5	6CB6	.2Ω	82Ω	0Ω	.1Ω	■0Ω	■0Ω	0Ω		
V 6	6AC7	0Ω	0Ω	0Ω	470KΩ	390Ω	■0Ω	.1Ω	†10KΩ	
V 7	6AU6	■100KΩ	■0Ω	■0Ω	■.1Ω	†22KΩ	†22KΩ	■0Ω		
V 8	6T8	INF	12KΩ	INF	0Ω	.1Ω	0Ω	0Ω	4.7MEG	■270KΩ
V 9	6AQ5	240KΩ	40KΩ	■0Ω	■.1Ω	†1.1KΩ	†800Ω	240KΩ		
V 10	12AU7	■680KΩ	1.2Meg	22KΩ	.1Ω	.1Ω	■6.1KΩ	22KΩ	2.2KΩ	0Ω
V 11	6SN7GT	2.8Meg	†22KΩ	0Ω	2.8Meg	#2.5Meg	0Ω	.1Ω	0Ω	
V 12	6S4	INF	1.6KΩ	2.2Meg	0Ω	.1Ω	2.2Meg	INF	INF	†1.4KΩ
V 13	6AL5	4.8Meg	4.8Meg	0Ω	.1Ω	15KΩ	0Ω	15KΩ		
V 14	6SN7GT	5.1Meg	†9.1KΩ	1.5KΩ	140KΩ	#325KΩ	1.5KΩ	0Ω	.1Ω	
V 15	6BQ6GT	INF	.1Ω	INF	†25KΩ	1Meg	INF	0Ω	47Ω	TOP CAP #42Ω
V 16	6AX4GT	†230Ω	INF	480KΩ	INF	†232Ω	INF	0Ω	.1Ω	
V 17	1B3GT	PINS	1 - 8	HAVE	INF	RESISTANCE				TOP CAP #347Ω
V 18	5U4G	INF	45KΩ	INF	28Ω	INF	26Ω	INF	45KΩ	
V 19	20DP4A	0Ω	8.2KΩ	PIN 10 #10KΩ	PIN 11 110KΩ	PIN 12 .1Ω				

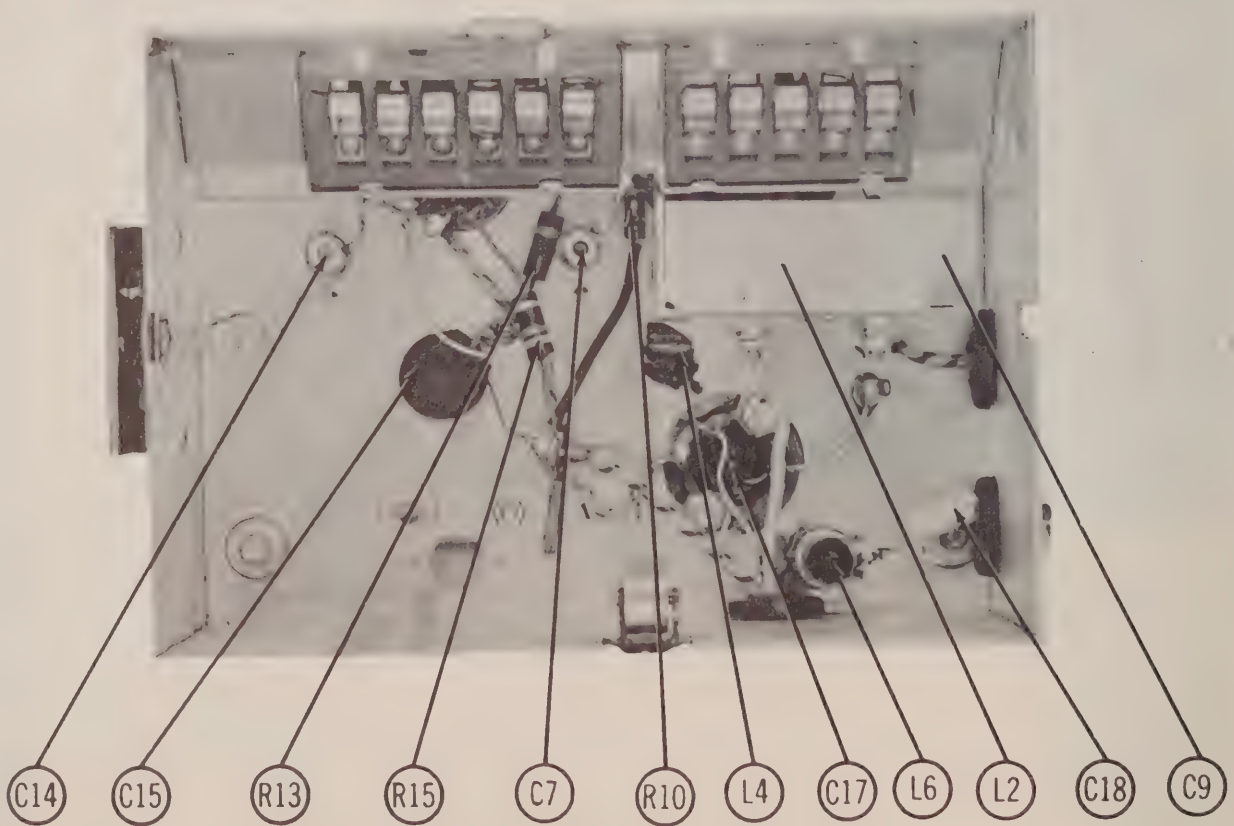
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V18
■ MEASURED FROM 135 VDC LINE



ALTERNATE TUNER SCHEMATIC

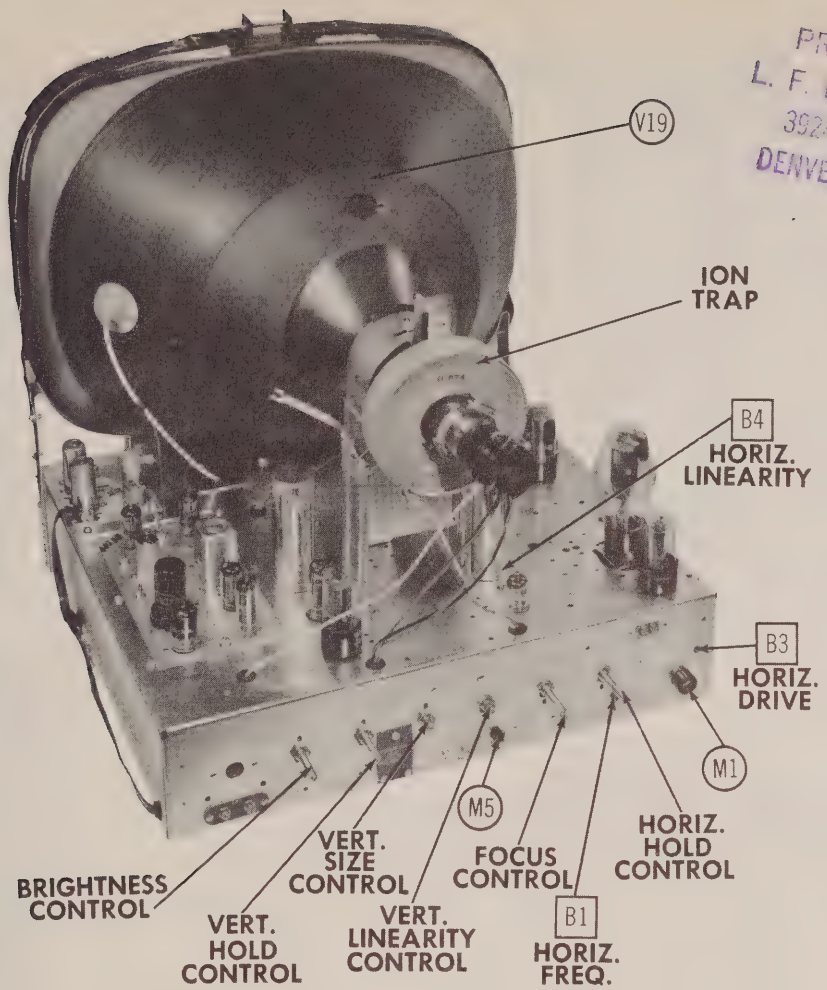


RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CHASSIS-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) counterclockwise to the point just before the picture starts to compress in the center.

Adjust the width slug (B3) for a picture slightly wider than enough to fill the picture mask.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Ambassador PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6CB6	6CB6	TCH	
B	RF Amplifier	6AQ5	6AQ5	TBD	
C	RF Amplifier	6BC5	6BC5	TBD	
V2	Converter	6J6	6J6	TDF	
V3	1st. Video IF Amp	6CB6	6CB6	TCH	
V4	2nd. Video IF Amp	6CB6	6CB6	TCH	
V5	3rd. Video IF Amp	6CB6	6CB6	TCH	
V6	Video Output	6AC7	6AC7	RM	
V7	Sound IF Amp.	6AU6	6AU6	TBK	
V8	Ratio Detector - AF Amp.	6T8	6T8	9E	
V9	Audio Output	6AQ5	6AQ5	TBZ	
V10	Sync Clipper - Sync Phase Inv.	12AU7	12AU7	8A	
V11	Vert. Oscillator Vert. Discharge	6SN7GT	6SN7GT	8BD	
V12	Vert. Output	6B4	6B4	9AC	
V13	Horiz. Phase Det.	6AL5	6AL5	6BT	
V14	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V15	Horiz. Output	6BQ6GT	6BQ6GT	8AM	
V16	Damper	6AX4GT	6AX4GT	4CG	
V17	HV Rectifier	1B3GT	1B3GT	3C	
V18	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Ambassador PART No.	REPLACEMENT DATA: SYLVANIA PART No.		RTMA BASE TYPE	NOTES
V19A	20DP4A	20DP4A		12D	① Circuit changes necessary
		20DP4 ②		12D	② 3/8" shorter
		20CP4 ① ②		12D	
		20MP4A ①		12C	
		20HP4A ①		12C	
B	24AP4. A	24AP4. A		12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Ambassador PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲80	450		AFH-87		UPT62245		FP245.3	TVL-2777	Note 1
B	▲20	450				BRH501		TC3501	UTVA-1310	
C	▲100	50								
C2A	▲40	450		AFH3-159				FP375	TVL-3764	
B	▲40	450		PRS200/30-30				TC68	UTVA-1613	
C	▲100	200								
D	60	200								
C3	40	350		PRS450/40		BR4035		TC78	TVA-1611	
C4	4	50		PRSI50/4		BR550		TC30	TVA-1303	Note 2
C5	4	50		PRSI50/4		BR550		TC30	TVA-1303	
C6	.5-3				829-3			CT585A		
C7	.5-3				829-3			CT585A		
C8	120			SI120	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C9	1000			SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C10	1000			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C11	.5-3				829-3			CT585A		
C12	30			SI30NP0	TC2-30		NP0K-300	2T-542		
C13	10			SI10N750	TC2-10		N750K-100	NT-541	5TCU-Q1	
C14	.5-3				829-3			CT585A		
C15A	1000			BPD-2X001	DD-2-102	TM5DD1	SI2-001	DCD-521	5HK-D1	
B	1000									
C16	72	500		1469-000075				MCB230		
C17	10			SI10NP0	TC2-10		NP0K-100	2T-541	5TCC-Q1	
C18	120	500		1469-00015		5R5T15		MCB336		
C19	5000			BPD-005	DD-502	TM5D5	BI1-005	DC-525	5HK-D5	
C20	5000			BPD-005	DD-502	TM5D5	BI1-005	DC-525	5HK-D5	
C21	5000			BPD-005	DD-502	TM5D5	BI1-005	DC-525	5HK-D5	Note 2
C22	.2	400		684-2		PTE4P22			4TM-P22	
C23	5000			BPD-005	DD-502	TM5D5	BI1-005	DC-525	5HK-D5	
C24	5000			BPD-005	DD-502	TM5D5	BI1-005	DC-525	5HK-D5	
C25	5000			BPD-005	DD-502	TM5D5	BI1-005	DC-525	5HK-D5	Note 2
C26	5000			BPD-005	DD-502	TM5D5	BI1-005	DC-525	5HK-D5	
C27	5000			BPD-005	DD-502	TM5D5	BI1-005	DC-525	5HK-D5	
C28	5000			BPD-005	DD-502	TM5D5	BI1-005	DC-525	5HK-D5	Note 2
C29	.2	600		684-2						
C30	10	500		1469-00001	TC2-10	5R5Q1	NP0K-100	MCB215	MB-41	
C31	.05	400		P488-05	DF-503	PTE455		PT415	4TM-S5	
C32	220			SI220	D6-221	5R5T25	GP2K-221	UC-5322	5GA-T22	Note 2
C33	47			SI47	D6-470	5R5Q5	GP1K-470	UC-5447	5GA-Q47	Note 3
C34	.2	400		684-2		PTE4P22		PT4025	4TM-P22	
C35	.02	1000		P1088-02		PTE1632		PT1612	MB-52	
C36	.05	400		P488-05	DF-503	PTE455		PT415	4TM-S5	
C37	.05	400		P488-05	DF-503	PTE455		PT415	4TM-S5	Note 4
C38	2.2				TCZ-2.2		NP0K-2R2			
C39	120			SI120	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C40	47			SI47	D6-470	5R5Q5	GP1K-470	UC-5447	5GA-Q47	Note 5
C41	5000			BPD-005	DD-502	TM5D5	SI1-005	DC-525	5HK-D5	
C42	5	500		1469-000005		5R5Y5		MCB205	MB-55	
C43	220	500		1468-00025	D6-221	5W5T25	GP2K-221	MC240	1FM-325	
C44	2000			SI2000	D6-202	TM5D2	GP2-333-202	UC-522	5HK-D2	
C45	5000			BPD-005	DD-502	TM5D5	SI1-005	DC-525	5HK-D5	
C46	5000			BPD-005	DD-502	TM5D5	SI1-005	DC-525	5HK-D5	
C47	470	500		1468-0005	D6-471	5W5T5	GP2K-471	MC245	1FM-35	
C48	.002	600		P488-002	D6-202	PTE5D2	GP2-333-202	PT622	6TM-D2	
C49	.01	600		P488-01	D6-103	PTE5S1	GP2-333-103	PT611	6TM-S1	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Ambassador PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C50	.2	400		684-2		PTE4P22		PT4025	4TM-P22	
C51	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C52A	.002			P688-002		PTE6D2	GP2-333-202	PT622		
B	.005			P688-005	#PC-100	PTE6D5	GP2-333-502	PT625	♦ 101C1	
C	.005			P688-005		PTE6D5	GP2-333-502	PT625		
C53	.0047	600		P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C54	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C55	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C56	.2	600		684-2						Note 3
C57	1000			SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C58	1000			SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C59	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C60	.005	600		P688-005	D6-502	PTE6D5	GP2-333-503	PT625	6TM-D5	
C61	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C62	3900	500		1464-004		1DRE5D4		MCB463		
C63	330	500		1469-00035						
C64	.2	600		684-2						
C65	390	500		1469-0004		5R5T4		MCB343	M3-34	Note 6
C66	390	500		1469-0004		5R5T4		MCB343	M3-34	
C67	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C68	.05	1000		P1088-05				PT1615	MB-85	
C69	.03	1000		P1088-03		PTE1633		PT1613	MB-83	

Note 1. Some models use two 40MFD in this application.
Note 2. Not used in all models.
Note 3. Some models use 120MMF in this application.
Note 4. Some models use 40MFD ② 50V. in this application.
Note 5. Some models use 75MMF in this application.
Note 6. Some models use 470MMF in this application.
♦ Items C52A, C52B, C52C, R52A, R52B, R52C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Ambassador PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1000Ω	½	P24-190A	QJ-328*			UF15R	Contrast -See Note
B	500KΩ	½					UR55A	Volume-Rear
C	Switch						US-26	Attach to R1B
R2A	50KΩ	½	P25-18	QU-123	AG-44-8	AB-31	U-35	Brightness
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R2A
R3A	50KΩ	½	P25-18	QU-123	AG-44-8	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R3A
R4A	2Meg	½	P25-15	QU-139	AG-83-8	AB-75	SU-56	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R4A
R5A	2Meg	½	P25-20	QU-139	AG-83-8	AB-75	U-56	Vert. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R5A
R6A	2500Ω	½	P25-13	QU-112	AG-16-8	AB-7	U-8	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7	2250Ω	4	P25-19		RTV-319		TVF143	Focus-Wire Wound

NOTE: Connect 1800Ω resistor between center terminal and maximum clockwise terminal (Control viewed from shaft end, terminals down).
* CONCENTRIRET EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B1T-110 & P1-224 (Panel)
B13-133 & R2-306 (Rear) & Switch 76-1.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Ambassador PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE NOTED
R8	3900Ω	½		BTS-3900	Antenna Coil Shunt
R9	47KΩ 20%	½			RF Amp. Grid
R10	2200Ω 20%	½		BTS-2200	RF Amp. Decoupling
R11	10KΩ	½			RF Coil Shunt
R12	4700Ω	½		BTS-4700	Mixer Grid
R13	220KΩ 20%	½			Mixer Grid
R14	10KΩ	½			Oscillator Grid
R15	4700Ω	½		BTS-4700	Oscillator Plate
R16	4700Ω	½		BTS-4700	1st. Video IF Grid
R17	56Ω	½			1st Video IF Cathode
R18	680Ω	½		BTS-680	AGC Network
R19	6800Ω	½			2nd. Video IF Coil Shunt
R20	56Ω	½			2nd. Video IF Cathode
R21	1Meg 20%	½		BTS-1Meg	AGC Network
R22	100Ω	½		BTS-100	Decoupling
R23	100Ω	½		BTS-100	Decoupling
R24	6800Ω	½			3rd. Video IF Coil Shunt
R25	82Ω	½		BTS-82	3rd. Video IF Cathode
R26	5600Ω	½		BTS-5600	Video Detector Diode Load
R27	470KΩ	½		BTS-470K	Video Output Grid
R28	82Ω	½		BTS-82	Video Output Cathode
R29	1000Ω	½		BTS-1000	Contrast Network
R30	6800Ω	2		BTS-6800	Video Output Plate
R31	10KΩ	½		BTS-10K	Isolation
R32	100KΩ	½		BTS-100K	Picture Tube Cathode
R33	10KΩ	½		BTS-10K	Acc. Anode Load
R34	100KΩ	½		BTS-100K	Sound IF Grid
R35	22KΩ	2		BTS-22K	Sound IF Decoupling
R36	150Ω	½		BTS-150	Balancing
R37	47KΩ 20%	½		BTS-47K	De-emphasis
R38	12KΩ	½		BTS-12K	Ratio Det. Diode Load
R39	4.7Meg	½		BTS-4.7Meg	AF Amp. Grid
R40	270KΩ	½		BTS-270K	AF Amp. Plate
R41	330KΩ 5%	½		BTS-330K 5%	Voltage Divider
R42	180KΩ 5%	½		BTS-180K 5%	Voltage Divider
R43	100KΩ	½		BTS-100K	AF Output Grid
R44	800Ω	5		1 3/4A-800	AF Output Decoupling - Wire Wound
R45	1.2Meg	½		BTS-1.2Meg	Sync Clipper Grid
R46	22KΩ	½		BTS-22K	Sync Clipper Cathode
R47	680KΩ	½		BTS-680 K	Sync Clipper Plate
R48	22KΩ	½		BTS-22K	Sync. Ph.Inv. Grid
R49	2200Ω	½		BTS-2200	Sync Ph.Inv. Cathode
R50	3900Ω	½		BTS-3900	Sync Ph.Inv. Plate
R51	2200Ω	½		BTS-2200	Sync Ph.Inv. Plate

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: An Ambassador PART No.	IRC PART No.	IDENTIFICATION CODES
R52A	22KΩ	½	♦	BTS-22K	Integrator Network
B	8200Ω	½		BTS 8200	Integrator Network
C	8200Ω	½		BTS-8200	Integrator Network
R53	1.5Meg	½		BTS-1.5M	Vert.Osc. Grid
R54	10KΩ	½		BTS-10K	Vert. Osc. Trans. Plate
R55	22KΩ	½		BTS-22K	Vert. Osc. Plate
R56	1.5 Meg	½		BTS-1.5Meg	Vert. Discharge Plate - See Note 1
R57	56KΩ	½		BTS-56K	Vert. Discharge Plate Decoupling
R58	470KΩ	½		BTS-470K	Voltage Divider
R59	8200Ω	½		BTS-8200	Vert. Peaking
R60	2.2Meg	½		BTS-2.2Meg	Vert. Output Grid
R61	680Ω	½		BTS-680	Vert. Output Cathode
R62	100KΩ	½		BTS-100K	Horiz. Ph.Det. Diode Load
R63	100KΩ	½		BTS-100K	Horiz. Ph.Det. Diode Load
R64	4.7Meg	½		BTS-4.7Meg	Horiz. Ph.Det. Diode Load
R65	470KΩ	½		BTS-470K	Horiz.AFC Filter
R66	560Ω	½		BTS-5600	Horiz.M.V.Plate
R67	150Ω	½		BTS-150	Horiz.M.V. Cathode
R68	100KΩ	½		BTS-100K	Horiz.M.V. Grid
R69	270KΩ	½		BTS-270K	Horiz.M.V. Plate
R70	56KΩ	½		BTS-56K	Horiz. M.V. Plate Dec.
R71	4700Ω	½		BTS-4700	Horiz. Peaking
R72	56Ω	½			Parasitic Suppressor
R73	1Meg	½		BTS-1Meg	Horiz.Output Grid - See Note 2
R74	25KΩ	10		1 3/4A-25K	Horiz.Output Screen - Wire Wound
R75	47Ω	1			Horiz.Output Cathode - See Note 3
R76	3.3Ω	½			H.V. Rect.Filament
R77	470KΩ	2			H.V. Filter
R78	15KΩ	½		BTS-15K	Horiz. Feedback
R79	3300Ω	2		BTS-3300	Voltage Divider
R80	330Ω 20%	2		BTS-330	Focus Coil Shunt
R81	27Ω	1			Horiz. Output Cathode - See Note 4

Note 1. Some Models may use a 2.7Meg Resistor in this application
♦ Items C52A, C52B, C52C, R52A, R52B and R52C are combined in one unit
Note 2. Some Models may use a 470KΩ Resistor in this application
Note 3. Some Models may use a 1850 Resistor in this application
Note 4. Not used in all Models

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: Ambassador PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117V AC @1.94A	800V CT @.220ADC	5V AC @ 3A	6.3V AC @ 9A SEC. 1 6.3V AC @.75A			P-3067		

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: Ambassador PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T2	170Ω	1000Ω		A-8111 ②	A-3000 ②	TBO-3 ②	A-97X	Vert. Osc. Trans. Horiz. Output Trans.
T3	325Ω	7.5Ω Tap @ 5Ω, 5.5Ω						
	Tap @ 20Ω	SEC. 2 1.7Ω						
		SEC. 3 0Ω						
T4	1230Ω			A-8123	A-3037	TBO-8	A-102X	Vert. Output Trans.
	Tap @ 10Ω							
T5	8.5Ω			DY-8	MDF-70	TY-2	Y-12	Horiz. Deflection coils.
	45Ω							Vert. Deflection Coils.
T6	400Ω			FC-11			B-470-R	Focus Coil.

② Drill one new mtg. hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: Ambassador PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T7	7.6KΩ	3.2Ω	365Ω	.7Ω		A-3849	A3020	RO-201	S-9X	

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DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Ambassador PART No.	MERIT PART No.	
L1	Ant. Coil	0Ω				
L2	Fil. Choke	0Ω				
L3	RF, Mixer Grid & Osc.	0Ω				
L4	Fil. Choke	0Ω				
L5	Conv. Plate & IF Trap	1.6Ω	0Ω			
L6	1st. Video IF	1Ω				
L7	Fil. Choke	0Ω				
L8	2nd. Video IF	.2Ω	.2Ω			
L9	3rd. Video IF	.2Ω	.2Ω			
L10	4th. Video IF	.2Ω	.2Ω			
L11	Peaking Coil	2.4Ω			TV-180	White, 36 Microhenries
L12	Peaking Coil	9.5Ω				Red, 375 Microhenries
L13	Peaking Coil	6.8Ω			*TV-185	Blue, 225 Microhenries, Wound on 10K resistor
L14	4.5MC Trap	1.8Ω			TV-151	
L15	Peaking Coil	11Ω				Green, 510 Microhenries
L16	Sound IF	1.8Ω			TV-151	
L17	Ratio Det.	4.2Ω	.2Ω		TV-110	Tertiary Winding .7Ω
L18	Horiz. Osc.	47Ω			TV-163	
L19	Width Coil	.45Ω				
L20	Horiz. Lin.	22Ω			MWC-1	

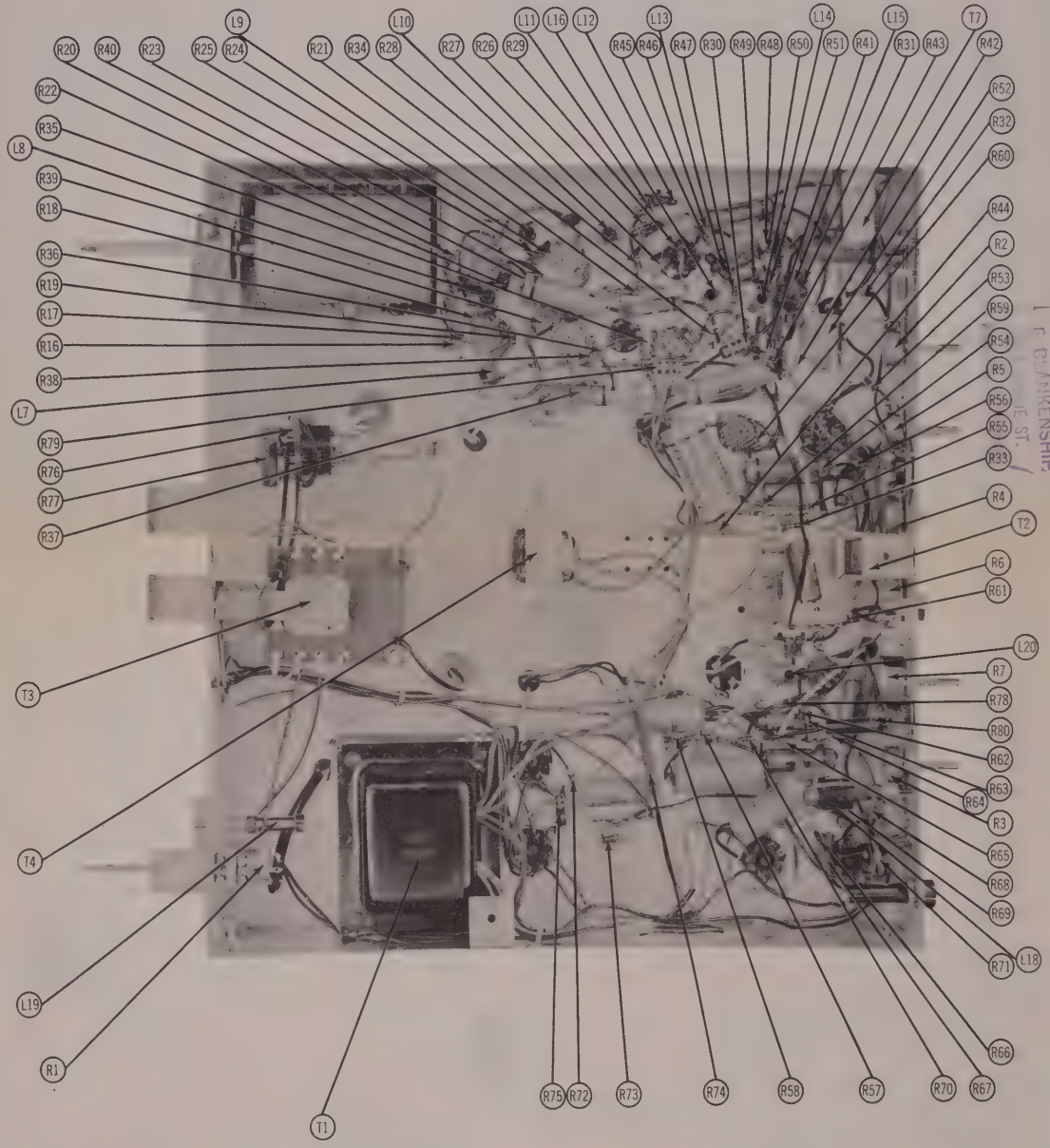
*Parallel with 10K resistor

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Ambassador PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	5A. 250V.			312005	341001	MTH5	HKP
M2	3AG Pigtail	1/4A. 250V.			318.250		GJV 1/4	

MISCELLANEOUS

ITEM No.	PART NAME	Ambassador PART No.	NOTES
M3	RF tuner		IN64
M4	Crystal		TV-Phono
M5	Switch		



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

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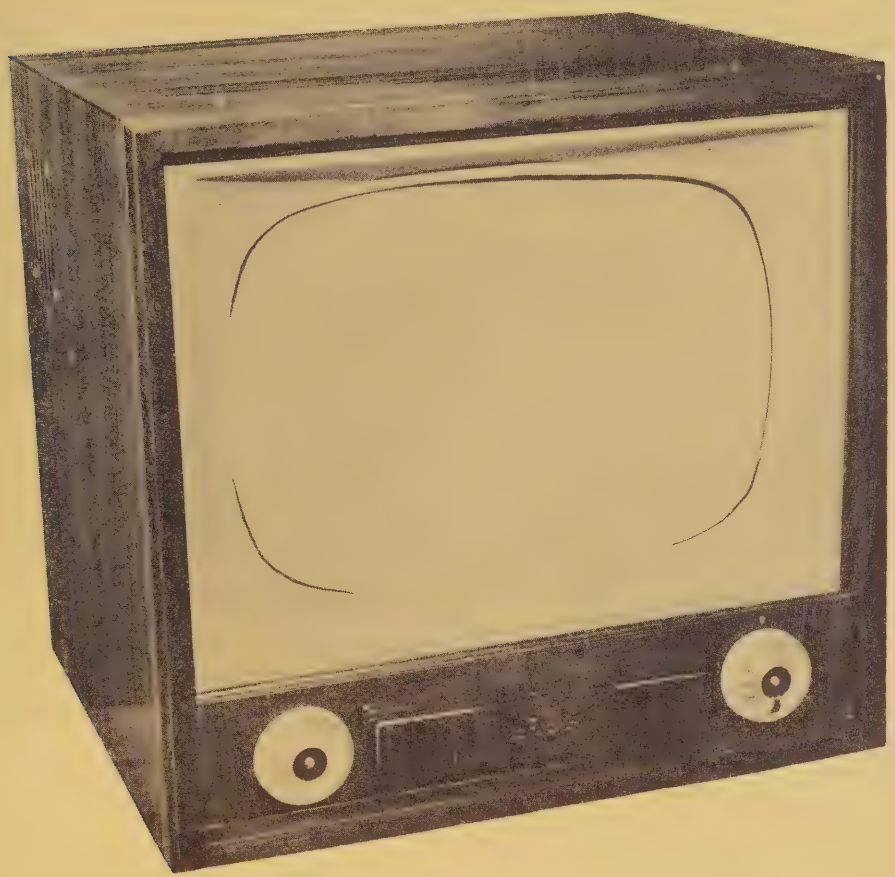

MODEL 5213TM

ARVIN
MODEL 5213TM (Ch. TE334)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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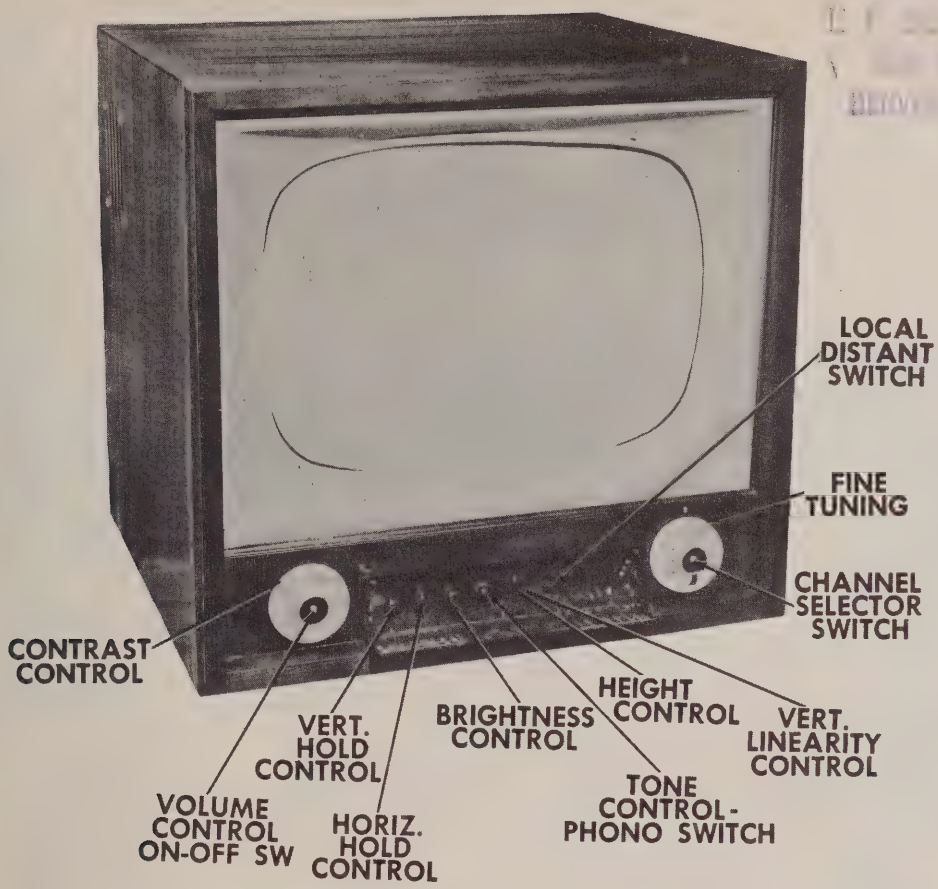
MODEL 5213TM (Ch. TE334)



TRADE NAME	Arvin Model 5213TM (Ch. TE334)
MANUFACTURER	Arvin Industries , Columbus, Indiana
TYPE SET	Television Receiver
TUBES	Twenty-six
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	2 Amp @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13

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ARVIN
MODEL 5213TM (Ch. TE334)

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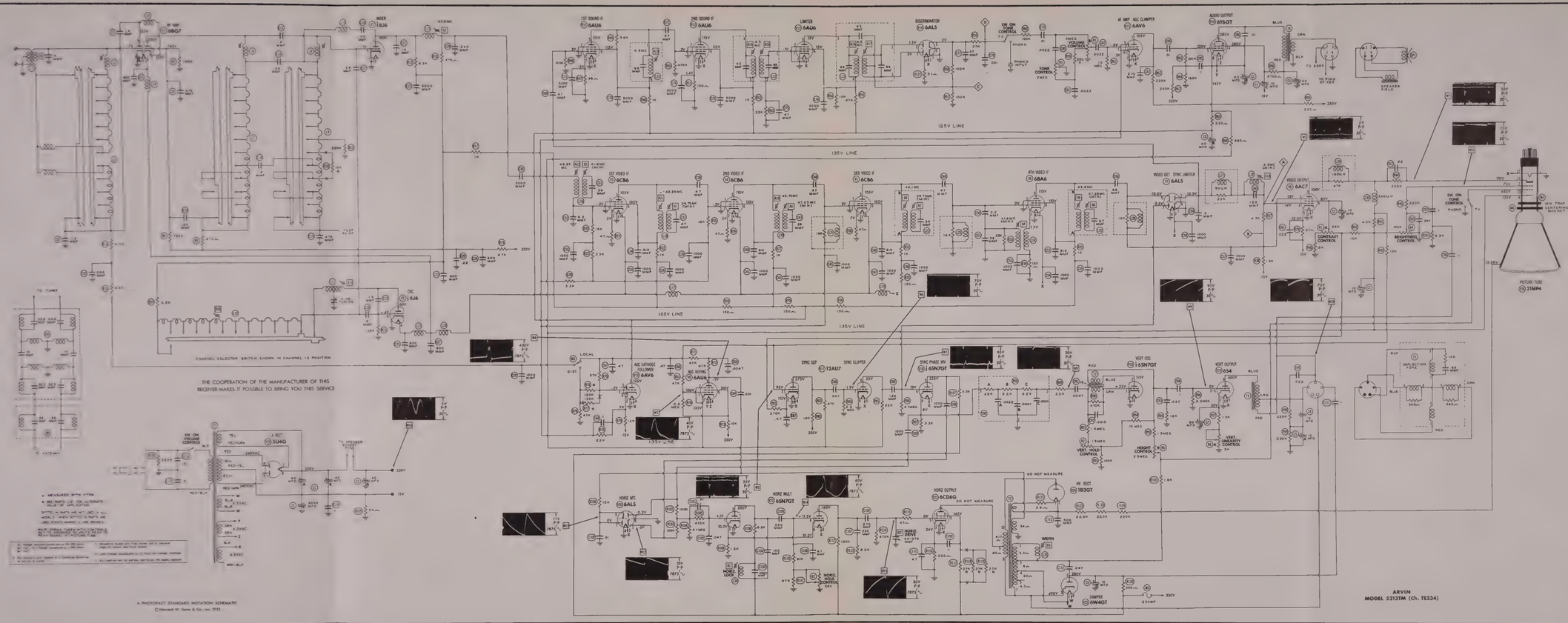
ARVIN
MODEL 5213TM (Ch. TE334)
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1953
125V LINE
135V LINE
330V
ARVIN
MODEL 5213TM (Ch. TE334)

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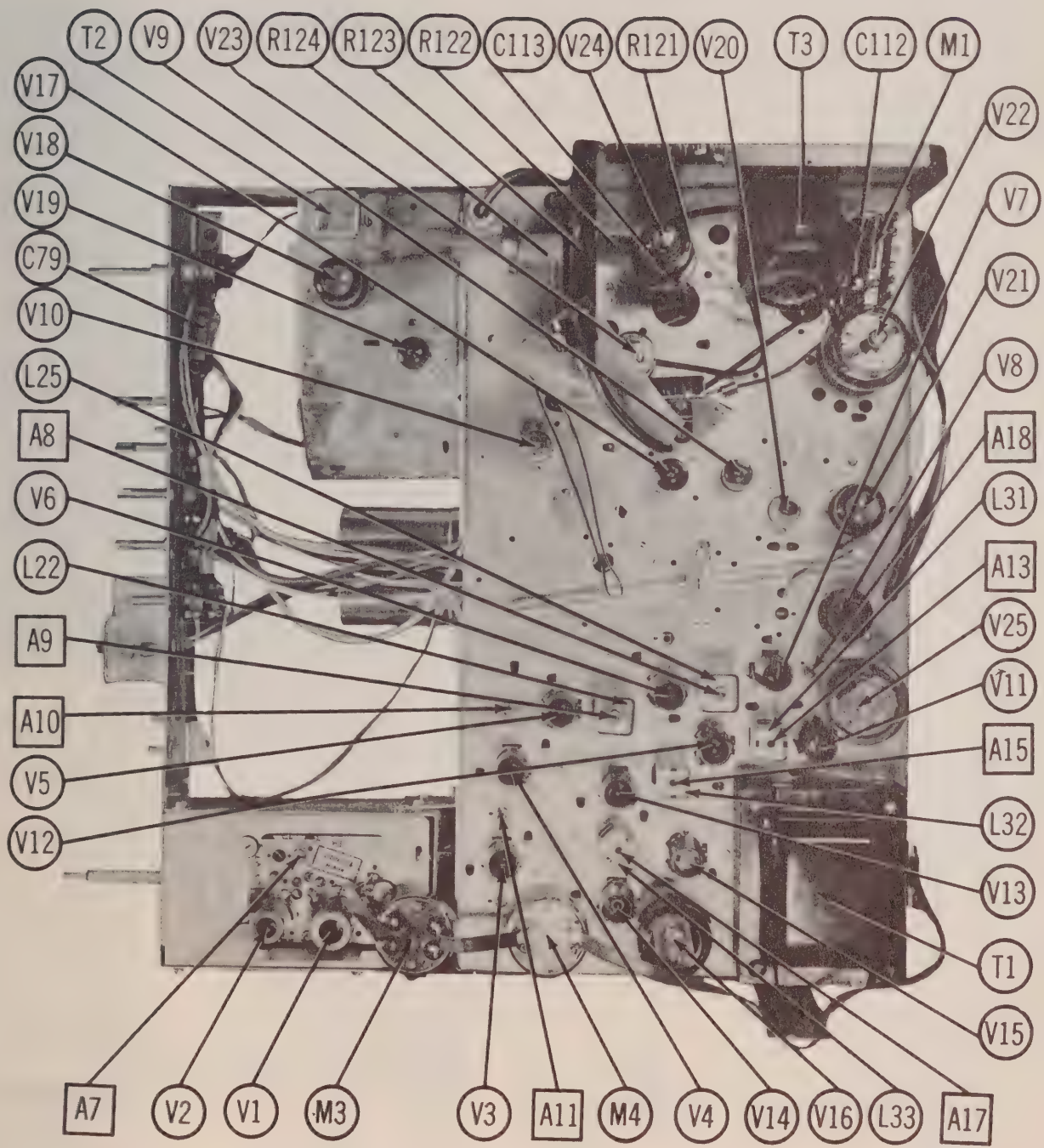
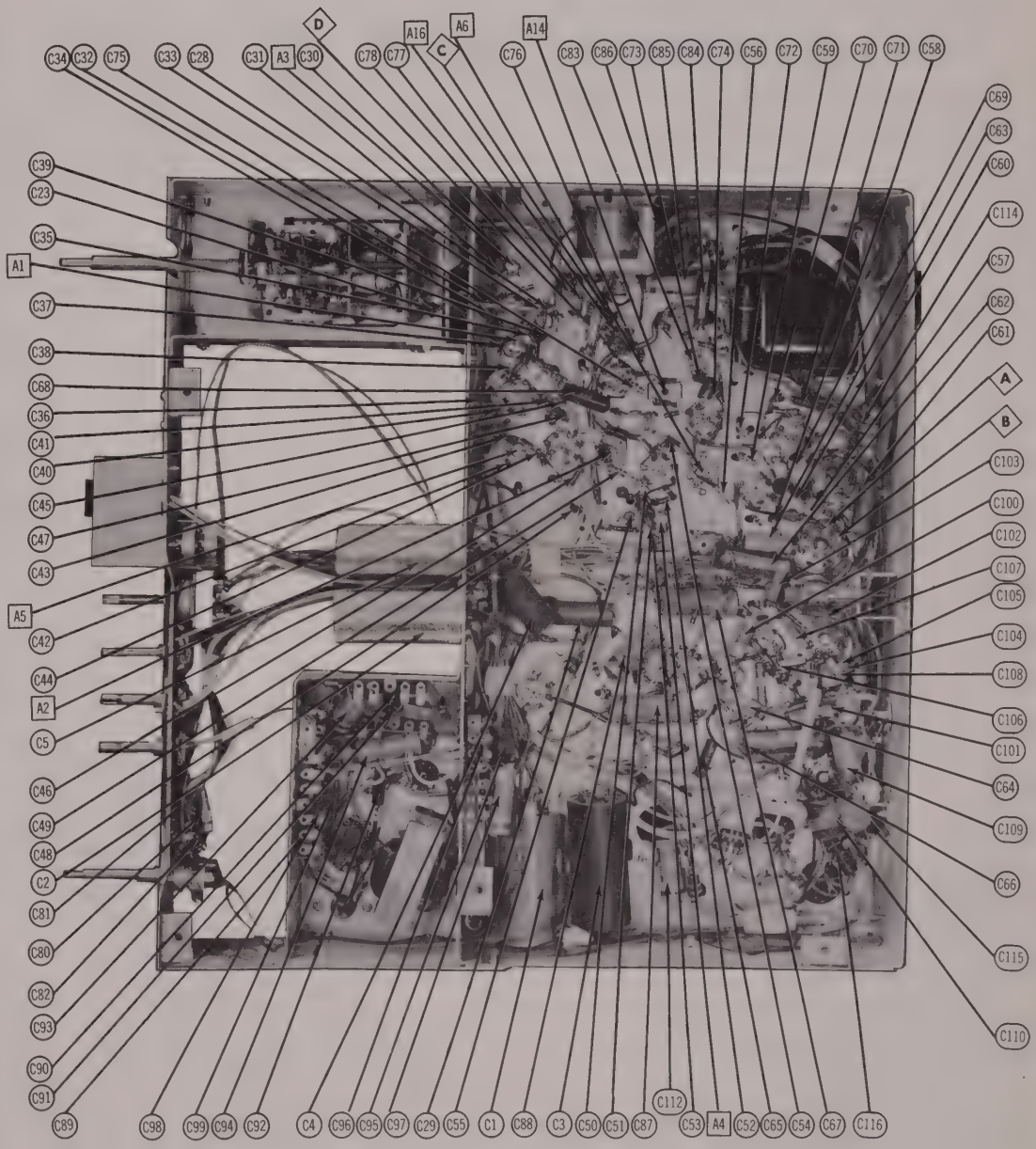


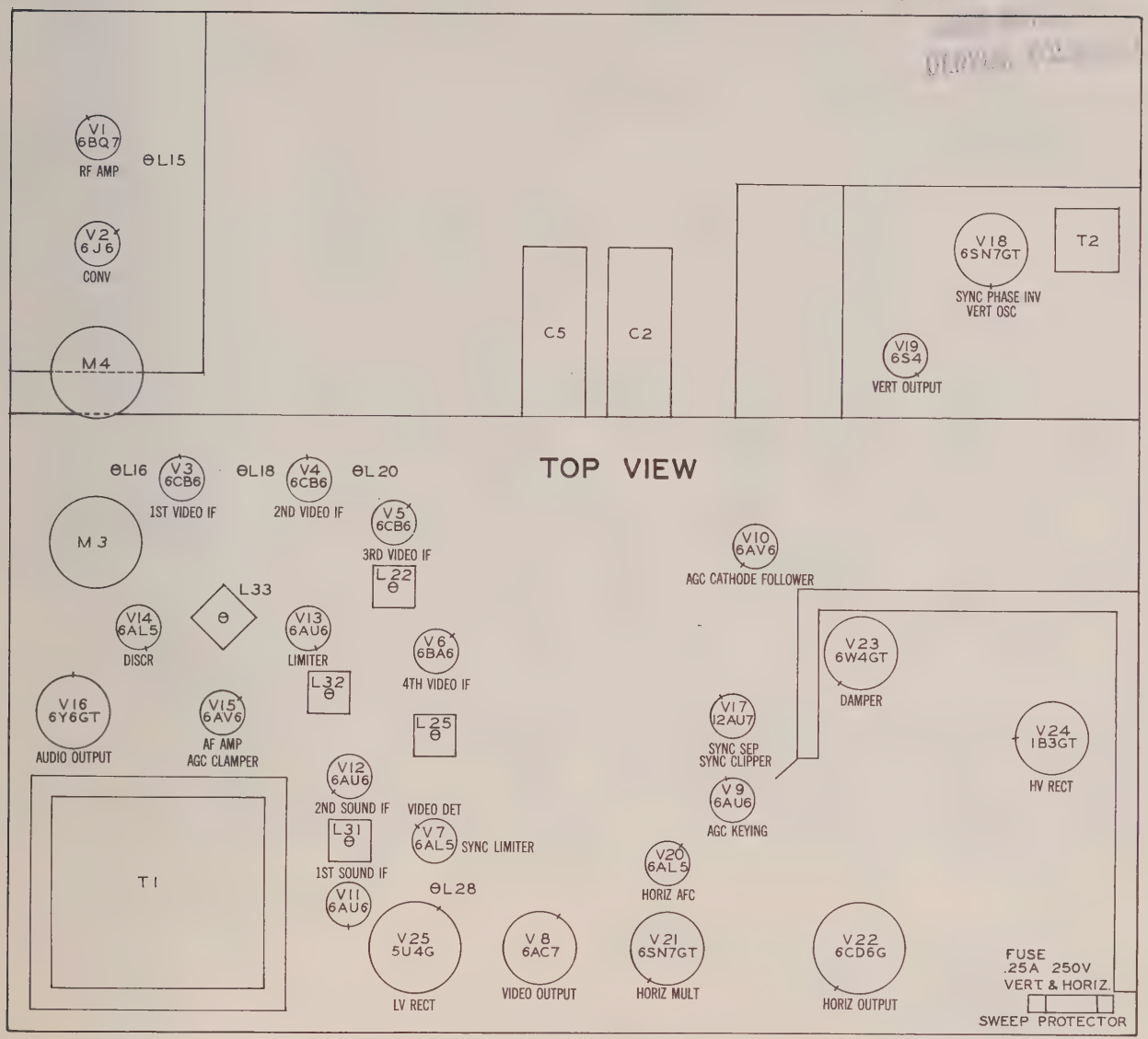
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

DENVER, COLORADO

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-V25

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V6, V7, V16
No pic, no sound, has snow-V1, V2, V3
No pic, has sound, has raster-V8, V26
Has pic, no sound-V11, V12, V13, V14, V15, V16
Overloaded picture-V9, V10, V15

SYNC FAILURE
No vert. sync.-V18
No horiz. sync.-V18, V20, V21
No vert. or horiz. sync.-V17, V18

SWEEP FAILURE
No raster, has sound-V21, V22, V23, V24, V26 Fuse (M1)
No vertical deflection-V19
Poor vert. linearity or foldover-V18, V19
Poor horiz. linearity or foldover-V21, V22, V23
Narrow picture-V21, V22, V23, V24, V25
Vert. off freq.-V18
Horiz. off freq.-V18, V20, V21

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal mutivibrator tube, V21.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the junction of L21 and R28. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	39.75MC (Unmod)	Any	DC probe to point (A) Common to point (B)	A1, A2	Adjust for MINIMUM deflection.
2.	"	"	41.6MC	"	"	A3, A4	"
3.	"	"	47.25MC	"	"	A5, A6	"
4.	"	"	45.3MC	"	"	A7	Adjust for maximum deflection.
5.	"	"	45MC	"	"	A8	"
6.	"	"	43.1MC	"	"	A9	"
7.	"	"	45.75MC	"	"	A10	"
8.	"	"	42.25MC	"	"	A11, A12	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	44MC (10MC Swp)	41.6MC 42.25MC 42.75MC 45.00MC 45.75MC	Any	Vert. amp to point (A) Low side to chassis.		Check for response similar to fig. 1 with markers as shown.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.001MFD	High side to pin 1 (grid) of 6AU6 (V11). Low side to chassis.	4.5MC Unmod.	Any	DC probe thru 1 Meg to point (C) Common to chassis.	A13, A14, A15, A16	Adjust for maximum deflection.
11.	"	"	"	"	DC probe to point (D) Common to chassis.	A17	Adjust for a zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	.001MFD	High side to pin 1 (grid) of 6AU6 (V11) Low side to chassis.	4.5MC (450KC Swp	4.5MC	Any	Vert. amp thru 47KΩ to point (C) Low side to chassis.	A13, A14, A15, A16	Adjust for curve of maximum amplitude and symmetry as in fig. 2.
11.	"	"	"	"	"	Vert. amp to point (D) Low side to chassis.	A17	Adjust so that 4.5MC occurs at center of crossover lines as in fig. 3. SLIGHTLY retouch A16 for maximum amplitude and straightness of crossover lines.

4.5 MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	.001MFD	High side to pin 5 (cathode) of 6AL5 (V7A) Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector (fig. 4) to pin 11 of picture tube.	A18	Adjust for MINIMUM deflection.

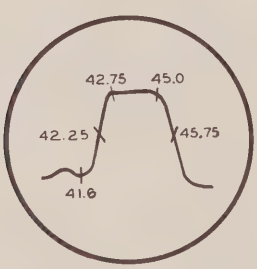


FIG. 1

FIG. 2

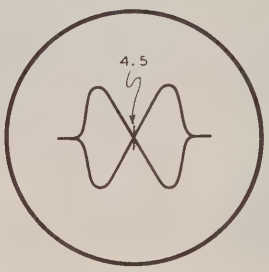


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC swp)	215.75MC	13	Vert. Amp. to point ◇A◇. Low side to chassis.	A19	Adjust to place sound marker slightly lower in frequency than trap notch, as in fig. 5.
14.	"	"	207MC (10MC Swp)	209.75MC	12	"		Check for sound marker placement as in fig. 5. If necessary make compromise adjustment of A19 for any individual channel, then check all other high band channels to see that they have not been seriously affected.
			201MC (10MC Swp)	203.75MC	11			
			195MC (10MC Swp)	197.75MC	10			
			189MC (10MC Swp)	191.75MC	9			
			183MC (10MC Swp)	185.75MC	8			
			177MC (10MC Swp)	179.75MC	7			
15.	"	"	85MC (10MC Swp)	87.75MC	6	"	A20	Adjust to place sound marker slightly lower in frequency than trap notch as in fig. 5.
16.	"	"	79MC (10MC Swp)	81.75MC	5	"		Check for sound marker placement as in fig. 5. If necessary make compromise adjustment of A20. for any individual channel, then all other low band channels to see that they have not been seriously affected.
			69MC (10MC Swp)	71.75MC	4			
			63MC (10MC Swp)	65.75MC	3			
			57MC (10MC Swp)	59.75MC	2			

RF AND MIXER ALIGNMENT

The RF and Mixer portions of this receiver have been properly aligned at the factory and are very stable. Alignment of these portions should not be required in the field.

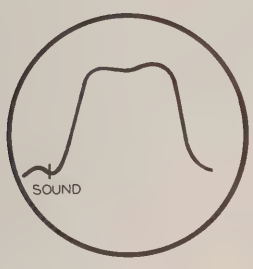


FIG.5

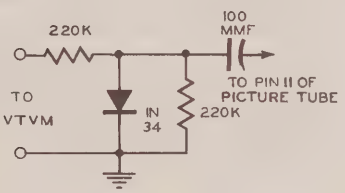
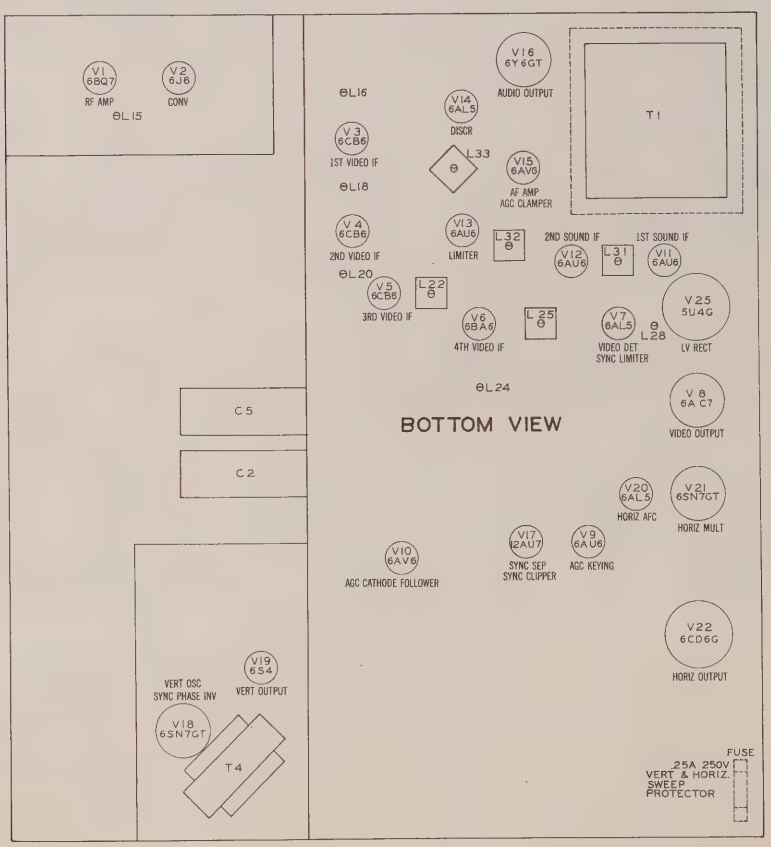


FIG.4

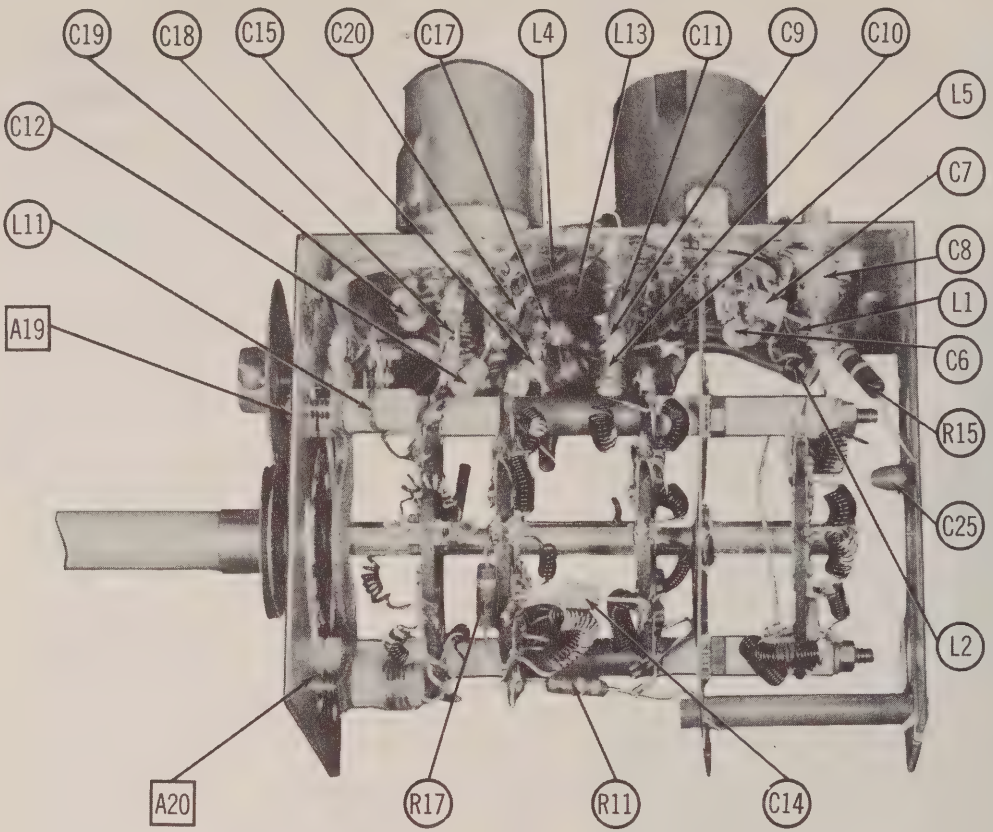
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	#3.3KΩ	#440KΩ	INF	.1Ω	0Ω	INF	132KΩ	0Ω	0Ω
V 2	6J6	†9.7KΩ	†9.7KΩ	0Ω	.1Ω	220KΩ	15KΩ	0Ω		
V 3	6CB6	55KΩ	47Ω	0Ω	.1Ω	†1.5KΩ	†1.5KΩ	0Ω		
V 4	6CB6	55KΩ	47Ω	.1Ω	0Ω	†1.4KΩ	†1.4KΩ	0Ω		
V 5	6CB6	34KΩ	47Ω	0Ω	.1Ω	†1.5KΩ	†1.5KΩ	0Ω		
V 6	6BA6	1.8Ω	0Ω	.1Ω	0Ω	†1.4KΩ	†1.4KΩ	120Ω		
V 7	6AL5	0Ω	6.2KΩ	.1Ω	0Ω	1.5KΩ	0Ω	4.7Meg		
V 8	6AC7	0Ω	0Ω	1.5KΩ	6.2KΩ	77Ω	†13.5KΩ	.1Ω	†5KΩ	
V 9	6AU6	†62KΩ	†680Ω	†0Ω	†.1Ω	228KΩ	#10KΩ	†680Ω		
V 10	6AV6	107KΩ	12KΩ	0Ω	.1Ω	INF	INF	†220Ω		
V 11	6AU6	100KΩ	0Ω	0Ω	.1Ω	†1.2KΩ	†1.2KΩ	68Ω		
V 12	6AU6	470KΩ	0Ω	0Ω	.1Ω	†1.2KΩ	†1.2KΩ	150Ω		
V 13	6AU6	22KΩ	0Ω	.1Ω	0Ω	8.6KΩ	8.6KΩ	0Ω		
V 14	6AL5	0Ω	100KΩ	.1Ω	4.1Ω	200KΩ	0Ω	100KΩ		
V 15	6AV6	10 Meg	0Ω	0Ω	.1Ω	34KΩ	34KΩ	#220KΩ		
V 16	6Y6G	INF	†.1Ω	#515Ω	#3KΩ	255KΩ	.4Ω	†0Ω	18KΩ	
V 17	12AU7	#14KΩ	†15KΩ	†280KΩ	.1Ω	.1Ω	†22KΩ	2.2Meg	0Ω	0Ω
V 18	6SN7GT	2.2Meg	■1.7Meg	0Ω	4.7Meg	#3.4KΩ	3.3KΩ	.1Ω	0Ω	
V 19	6S4	INF	2.4KΩ	2.2Meg	.1Ω	0Ω	2.2Meg	INF	INF	■1.6KΩ
V 20	6AL5	4.8Meg	4.8Meg	.1Ω	0Ω	15KΩ	0Ω	15KΩ		
V 21	6SN7GT	5.2Meg	#8.3KΩ	1.2KΩ	105KΩ	#120KΩ	1.2KΩ	0Ω	.1Ω	
V 22	6CD6G	INF	0Ω	220Ω	INF	470KΩ	#594Ω	.1Ω	#9.1KΩ	Top Cap ■20Ω
V 23	6W4GT	INF	INF	400KΩ	INF	#594Ω	INF	■24.3Ω	■24.4Ω	
V 24	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ■434Ω
V 25	5U4G	■1.8KΩ	60KΩ	†220Ω	68Ω	50Ω	70Ω	50Ω	60KΩ	
V 26	21MP4	0Ω	270KΩ	Pin 6 †680Ω	Pin 10 ■1.8KΩ	Pin 11 †220KΩ	Pin 12 .1Ω			

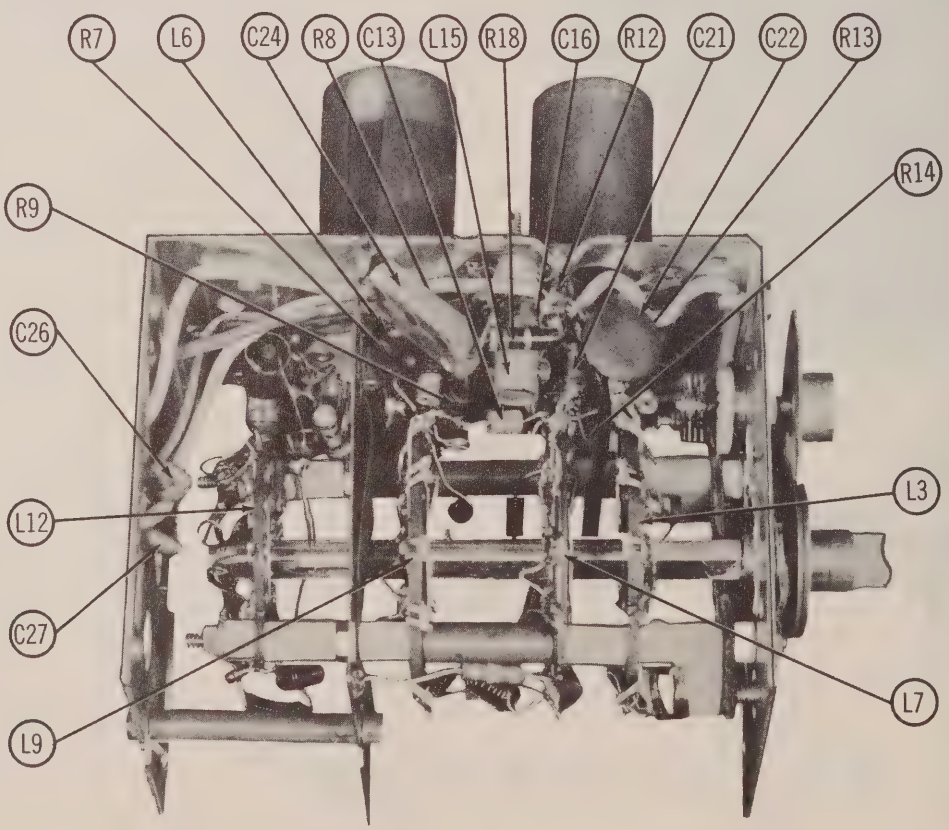
LOCAL-DISTANCE SWITCH IN "LOCAL" POSITION
† MEASURED FROM PIN 8 OF V16
# MEASURED FROM PIN 8 OF V25
■ MEASURED FROM PIN 3 OF V23



TUBE PLACEMENT CHART

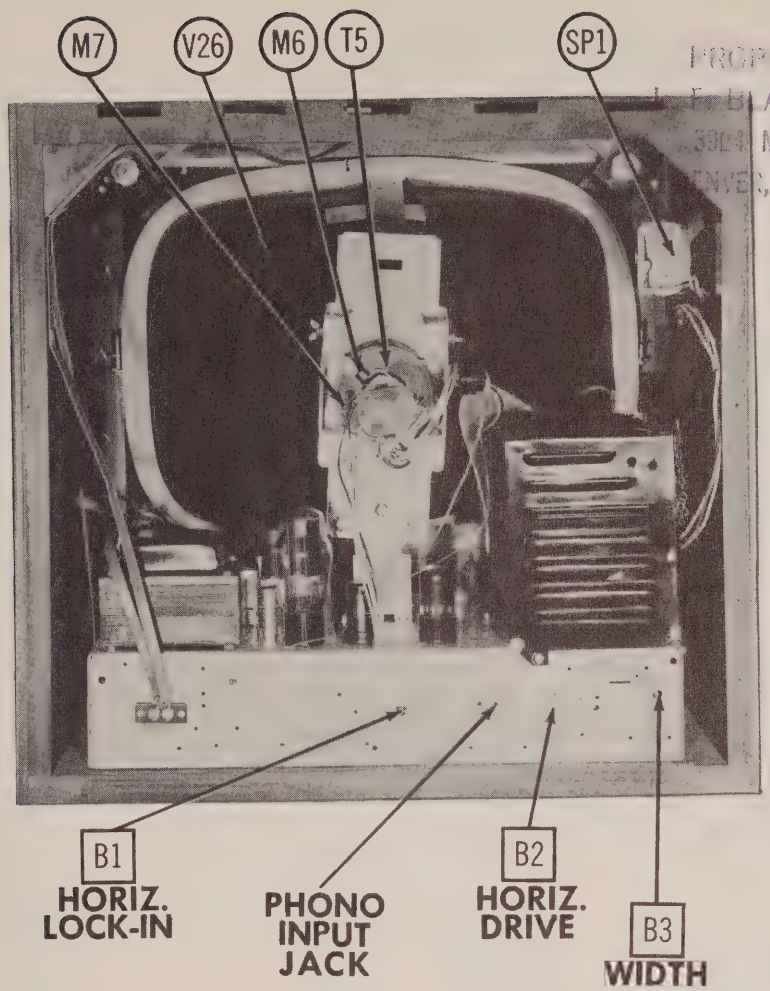


RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

PROPERTY OF
ANKENSHIP
MEADE ST.
, COLORADO



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern. Set the horizontal hold control at the mid-point of its range and adjust the horizontal lock slug (B1) until the picture synchronizes horizontally. Turn B1 clockwise until the picture loses sync., then counter-clockwise until picture just falls into sync. Turn the horizontal hold control fully counter-clockwise and momentarily switch to another channel and back again. The picture should be out of sync. Note the number of diagonal bars present in the picture. Repeat the procedure with the horizontal hold in extreme clockwise rotation and again note the number of diagonal bars. They should be the same for both positions of the horizontal hold. Adjust B1 for this condition. Adjust the horizontal drive trimmer (B2) counter-clockwise as far as possible without the presence of a vertical white line or compression of the center of the picture. Adjust the width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

DISASSEMBLY INSTRUCTIONS

1. Remove 8 push on type control knobs from front panel.
2. Remove 6 wood screws. Remove rear cover.
3. Disconnect built-in antenna. Remove 1 screw . Disconnect speaker plug.
4. Remove 1 screw . Disconnect yoke plug.
5. Disconnect CRT socket, HV lead.
6. Remove 1 metal screw from middle & yoke bracket.
7. Remove 6 chassis bolts. Remove chassis.
8. Remove 4 speaker nuts. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ARVIN Part No.	STANDARD REPLACEMENT	BMA BASE TYPE	NOTES
V1	RF Amplifier		6BQ7	9AJ	
V2	Converter		6J6	7BF	
V3	1st. Video IF Amp.		6CB6	7CM	
V4	2nd. Video IF Amp.		6CB6	7CM	
V5	3rd Video IF Amp.		6CB6	7CM	
V6	4th Video IF Amp.		6BA6	7BK	
V7	Video Detector-Sync. Limiter		6AL5	6BT	
V8	Video Output		6AC7	9N	
V9	AGC Keying		6AU6	7BK	
V10	AGC Cathode Follower		6AV6	7BT	
V11	1st. Sound IF Amp.		6AU6	7BK	
V12	2nd Sound IF Amp.		6AU6	7BK	
V13	Limiter		6AU6	7BK	
V14	Discriminator		6AL5	6BT	
V15	A.F Amplifier-AGC Clamper		6AV6	7BT	
V16	Audio Output		6V6G	7S	
V17	Sync Separator-Sync Clipper		12AU7	9A	
V18	Sync Phase Inv.-Vert. Oscillator		6SN7GT	8BD	
V19	Vert. Output		6S4	9AC	
V20	Horiz. AFC		6AL5	6BT	
V21	Horiz. Mult.		6SN7GT	8BD	
V22	Horiz. Output		6CD6G	5BT	
V23	Damper		6W4GT	4CG	
V24	HV Rectifier		1B3GT	3C	
V25	LV Rectifier		5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: ARVIN Part No.	SYLVANIA Part No.	RTMA BASE TYPE	NOTES
V26	21MP4		I2C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: ARVIN Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C1A	±40	450	E22422-7	AFH3-43		UPT44145	FP376.8	TVL-3785		
B	±40	450		PRS350/12		BR1045A	TC62	TVA-1604		
C	±10	450								
D	10	350								
C2A	±60	450	E22422-9			UPT42145	FP422.7	TVL-3756		
B	±40	250				Y10		TVA-1606		
C	±10	150				BR4025A				
D	80	50								
C3	3000	15	E22422-13	AFH1-04		UP3M-15	WP042	TVL-1170		
C4	10	450	A24978	PRS450/10		BR1045A	TC72	TVA-1705		
C5A	±10	450	E22422-8	AFH3-41		UPT41145	FP396.2	TVL-3785		
B	40	250		PRS250/40		BR4025A	TC58	TVA-1705		
C	±40	450								
D	±10	450								
C6	6					N330K-040				
C7	1.6									
C8	7.5									
C9	470									
C10	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C11	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C12	.2									
C13	.56									
C14	1.6									
C15	470			SI470	D6-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C16	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C17	.39									
C18	10			SI10N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C19	1.5						N330K-1R5			
C20	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C21	15			SI15	D6-150		GP1K-150	UC-5415	5GA-Q15	
C22	5000			BPD-005	DD-502	TM5D5	SI1-005	DC-535	5HK-D5	
C23	800			BPD-0008	DD-801	TM5T8	801-001	DC-531	5HK-D1	
C24	240	500		1469-00025		SR5Y25			4C-325	
C25	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C26	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C27	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5HK-D1	
C28	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C29	.22	400	C20292-224	P488-22			BT4025		4TM-P22	
C30	5000		A21674	BPD-005	DD-502	TM5D5	81L-005	DC-535	5HK-D5	
C31	36				TCZ-36		NP0K-360			
C32	8.2		C20205-13				NP0K-8R2			
C33	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-525	5HK-D1	
C34	610		C20351-1							
C35	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-525	5HK-D1	
C36	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-535	5HK-D1	
C37	47			SI47NP0	TCZ-47		NP0K-470	2T-5447	5TCC-Q47	
C38	47		C20205-19	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C39	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C40	610		C20351-1							
C41	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C42	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C43	39				TCZ-39		NP0L-390		5TCC-Q39	
C44	47		C20205-19	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C45	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-531	5HK-D1	
C46	610		C20351-1							
C47	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C48	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5GA-G47	
C49	47		C20205-19	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5TCCB-V22	
C50	2.2		C20205-7		TCZ-2.2		NP0K-R3			
C51	36						NP0K-360			
C52	610		C20351-1							
C53	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: ARVIN Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C54	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C55	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C56	68		C20205-11	SI68	D6-680		GP1K-680	UC-5468	5GA-Q68	
C57	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C58	1000		A23078	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C59	5		C20205-9				N220K-050			
C60	120				TCZ-120		NP0-333-121			
C61	.022	600	C20291-223	P488-022		PTE8822		PT6122	6TM-S22	
C62	.22	400	C20292-224	P486-22		PTE4P25		PT4025	4TM-P22	
C63	.047	400	C20202-175	P488-047	DF-503	PTE4547		PT4147	4TM-S47	
C64	.001	600	C20295-102	P688-001	D6-102	PTE8D1	GP2L-102	PT621	6TM-D1	
C65	.0047	600	C20295-472	P688-0047	D6-473	PTE8D47	GP2-333-472	PT6347	6TM-D47	
C66	.47	400	C20291-474	484-5		PTE4P5		PT405	4TM-P5	
C67	.47	200	C20291-474	484-5		PTE2P5		PT205	2TM-P47	
C68	.1	200	C20291-104	P288-1	DF-104	PJ2P1		PT201	2TM-P1	
C69	47		C20205-19	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C70	5000		A21674	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C71	5000		A21674	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C72	47		C20205-19	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C73	5000		A21674	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C74	5000		A21674	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C75	47		C20205-19	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C76	5000		A21674	BPD-005	DD-502	TM5D5	81L-005	DC-525	5HK-D5	
C77	47		C20205-19	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C78	.001	400	C20295-102	P688-001	D6-102	PTE8D1	GP2L-102	PT621	6TM-D1	
C79	.01	600	C20295-103	P688-01	D6-103	PTE8D1	GP2-333-103	PT631	6TM-S1	
C80	.0022	600	C20295-222	P688-0022	D6-222	PTE8D22	GP2-333-222	PT6222	6TM-D22	
C81	.0033	600	C20295-332	P688-0033	D6-332	PTE8D33	GP2-333-332	PT6233	6TM-D33	
C82	.0033	600	C20295-332	P688-0033	D6-332	PTE8D33	GP2-333-332	PT6233	6TM-D33	
C83	270	500	C20290-271	1468-0003	D6-271	5WST3	GP2K-271	MC241	1FM-33	
C84	.01	1000	C20296-103	P1088-01		PTE18S1		PT181	MD-S1	
C85	.1	600	C20292-104	P688-1	DF-104	PTE8P1		PT801	6TM-P1	
C86	.01	1000	C20296-103	P1088-01		PTE18S1		PT181	MD-S1	
C87	.47	200	C20291-474	P288-47		PTE4P5		PT405	4TM-P47	
C88	.047	600	C20295-473	P688-047	DF-503	PTE8547		PT6147	6TM-S47	
C89	120	500	C20065-121	1468-00015	D6-121	5WST15	GP1K-121	MC236	1FM-312	
C90A	.0022			P688-0022		PTE8D22		PT6222		
B	.0047		*C24186	P688-0047	*DC-100	PTE8D47	*E1405-01	PT6247	*10IC1	
C	.0047			P688-0047		PTE6D47		PT6247		
C91	.0047	600	C20324-472	1464-005		1DR5D5		MCB465	MS-25	
C92	.0015	600	C20295-152	P688-0015		PTE8D15			6TM-D15	
C93	.047	600	C20295-473	P688-047		PTE8D47		PT6147	6TM-S47	
C94	.1	500	C20295-104	P688-1	DF-104	PTE8P1		PT601	6TM-P1	
C95	.022	600	C20291-223	P688-022		PTE8S22		PT6122	6TM-S22	
C96	.1	1000	C20329-104	P1088-1		PTE18P1		PT1601	MD-P1	
C97	.1	400	C20292-104	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C98	1000	500	C24612-102	1468-0001	D6-102	1W5D1	GP2L-102	MC255	1FM-21	
C99	1000	500	C24612-102	1468-001	D6-102	1W5D1	GP2L-102	MC255	1FM-21	
C100	.01	600	C20295-103	P688-01	D6-103	PTE8S1	GP2-333-103	PT631	6TM-S1	
C101	.01	600	C20295-103	P688-01	D6-103	PTE8S1	GP2-333-103	PT631	6TM-S1	
C102	.047	300	C20291-473	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C103	3900	500	C20374-392	1464-004		1DR5D4		MCB463	MS-24	
C104	100	500	C20290-101	1469-00001		SR5Y1		MCB235	MS-31	
C105	330	500	C20290-331	1469-00035						
C106	47	500	C20290-470	1469-00005		5R5Q5		MCB225	MS-45	
C107	330	500	C20290-331	1469-00035						
C108	270	500	C20290-271	1469-0003		5RST3		MCB241	MS-33	
C109	.1	600	C20295-104	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C110	.47	400	C20291-474	484-5		PTE4P5		PT405	4TM-P5	
C111	.1	400	C20292-104	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C112	.047	600	C20295-473	P688-047	DF-503	PTE8547		PT6147	6TM-S47	
C113	500	20000	A24994	8V30C	TV3-502	MM-C20TT	413-501		20DK-T5	
C114	.1	200	C20291-104	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C115	.01	600	C20358-103	8892GXY-01		PJ6S1		PT611	6TM-S1	
C116	.01	600	C20358-103	8892GXY-01		PJ6S1		PT611	6TM-S1	

* Items C90A, C90B, C90C, R88A, R88B, R88C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: ARVIN Part No.	IRC Part No.	CLAROSTAT Part No.	CENTRALAB Part No.	MALLORY Part No.	INSTALLATION NOTES
R1A	25KΩ		E22464-39	QJ-372**	RTV-258	SBBT-723-S		Contrast -- Panel
B	3Meg							Volume & Sw. - Tapped @ 800KΩ
								Rear
R2A	1.5Meg	½	E22464-36	Q11-138	AG-83-S	AB-75	U-155	Vert. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
R3A	50KΩ	½	E22464-37	Q11-123	AG-44-S	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R3A
R4A	100KΩ	½	E22464-34	Q11-138	AG-49-S	AB-40	U-41	Brightness
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R4A
R5	3Meg	½	E22464-35					Tone & TV-Phono Switch
R6A	3000Ω	2	E22464-20	QJ-71*	RTV-259			Vert. Linearity-Wire Wound-
B	2.5Meg	½						Panel, Height-Rear

* CONCENTRIKIT EQUIVALENT-KIT K-3, BASE ELEMENTS & SHAFTS W11-112 & P3-114 (Panel) B11-239 & R3-124 (Rear).
** CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B11-130 & P1-204 (Panel) B11-140X & R1-220 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: ARVIN Part No.	IRC Part No.	NOTES
R7	1 Meg-5%	½			
R8	750KΩ-5%	½			
R9	470Ω	½		BT8-470	Note 1
R10	10KΩ	½			
R11	220KΩ	½		BT8-220K	
R12	820KΩ	½			
R13	15KΩ	½		BT8-15K	
R14	8200Ω	½		BT8-8200	
R15	4700Ω	½		BT8-4700	
R16	3300Ω	½	C20061-332	BT8-3300	
R17	1000Ω	½	C20061-102	BT8-1000	
R18	470Ω	½		BT8-470	
R19	4700Ω	½	C20070-472	BTA-4700	
R20	15KΩ	½	C22381-153		
R21	47Ω	½	C22381-470		

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: ARVIN Part No.	IRC Part No.	NOTES
R22	1000Ω	½	C20061-102	BTS-1J30	
R23	33 000Ω	½	C20061-332	BTS-3J30	
R24	150Ω	½	C20061-151	BT8-150	
R25	18KΩ-5%	½	C22382-183		
R26	47Ω	½	C22381-470		
R27	1000Ω	½	C20061-102	BT8-1000	
R28	3300Ω	½	C20061-332	BT8-3300	
R29	150Ω	½	C20061-151	BT8-150	
R30	47Ω	½	C22381-470		
R31	1000Ω	½	C20061-102	BT8-1000	
R32	150Ω	½	C20061-151	BT8-150	
R33	22KΩ	½	C22381-223		
R34	120Ω	½	C22381-121	BT8-120	
R35	1000Ω	½	C20061-102	BT8-1000	
R36	150Ω	½	C20061-151	BT8-150	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: ARVIN Part No.	IRC Part No.	NOTES
R37	4700 Ω		C22381-472	BTS-4700	
R38	15000Ω		C20061-152	BT8-1500	
R39	270Ω		C22381-271		
R40	15KΩ		C22381-153	BT8-15K	
R41	4300Ω-5%	½	C22383-432	BTA-4300-5%	
R42	10KΩ	½	C22381-103	BTS-10K	
R43	10KΩ	½	C20061-103	BTS-10K	
R44	220 KΩ	½	C22381-224	BTS-220K	
R45	220KΩ	½	C22381-224	BTS-220K	
R46	100KΩ	½	C20061-104	BTS-100K	
R47	68Ω	½	C22381-680		
R48	1000Ω	½	C22381-102	BT8-1000	
R49	56000Ω	½	C22381-563		
R50	470KΩ	½	C20061-474		
R51	150Ω	½	C20061-151	BTS-150	
R52	1000Ω	½	C20061-102	BTS-1000	
R53	22KΩ	½	C22381-223	BTS-22K	
R54	10KΩ	½	C22381-103	BTS-10K	
R55	47KΩ	½	C22381-473	BTS-47K	
R56	27KΩ	½	C223i--	BTS-27K	
R57	100KΩ	½	C22381-104	BTS-100K	
R58	100KΩ	½	C22381-104	BTS-100K	
R59	220KΩ	½	C20061-224	BTS-220K	
R60	100KΩ	½	C20061-104	BTS-100K	
R61	10 Meg	½	C20061-106	BTS-10 Meg	
R62	220KΩ	½	C22381-224	BTS-220K	
R63	100KΩ	½	C22381-104	BTS-100K	
R64	180KΩ-5%	½	C22382-184	BTS-180K-5%	
R65	330Ω	2	C20302-221	BW-2-220	
R66	2700Ω	2	C20302-272	BTB-2700	
R67	240KΩ-5%	½	C22382-244	BTS-270K-5%	
R68	680Ω	½	C22381-681	BTS-680	
R69	220Ω	2	C20302-221	BW-2- 220	
R70	22KΩ	½	C22381-223	BTS-22K	
R71	47KΩ	½	C22381-473	BTS-47K	
R72	47KΩ	½	C22381-473	BTS-47K	
R73	10KΩ	½	C20061-103	BTS-10K	
R74	2.2Meg	½	C22381-225	BTS-2.2Meg	
R75	27KΩ	½	C22381-273	BTS-27K	
R76	120KΩ	½	C22381-124	BTS-120K	Note 2
R77	120KΩ	½	C22381-124	BTS-120K	Note 1
R78	27KΩ	½	C22381-473	BTS 47K	
R79	12KΩ-5%	½	C22382-123	BTS-12K-5%	
R80	18KΩ	½	C22381-183	BTS-18K	
R81	47KΩ	½	C20061-473	BTS-47K	
R82	270KΩ	½	C22381-274	BTS-270K	
R83	47KΩ	½	C22381-473	BTS-47K	
R84	2.2Meg	½	C22381-225	BTS-2.2Meg	

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: ARVIN Part No.	IRC Part No.	NOTES
R85	22KΩ	½	C22381-223	BTS-22K	
R86	4.7Meg	½	C22381-475	BTS-4.7Meg	
R87	3300Ω	½	C22381-332	BTS-3300	
R88A	22KΩ	½		BTS-22K	
B	82000Ω	½	*C24186	BTS-8200	
C	8200Ω	½		BTS-8200	
R89	22KΩ	½	C22381-223	BTS-22K	
R90	470KΩ	½	C22381-474	BTS- 470K	
R91	1.5Meg-5%	½	C22382-155	BTS-1.5Meg-5%	
R92	1.5Meg-5%	1	C22382-155	BTS-1.5Meg-5%	
R93	100KΩ	½	C22381-104	BTS-100K	
R94	10 Meg	½	C22381-106	BTS- 10 Meg	
R95	12KΩ	½	C22381-123	BTS-12K	
R96	2.2Meg	½	C22381-225	BTS- 2 2Meg	
R97	1500Ω	½	C20061-152	BTS-1500	
R98	220KΩ	½	C22381-224	BTS- 220K	
R99	220KΩ	½	C22381-224	BTS-220K	
R100	1800Ω	2	C20302-182	BTB-1800	
R101	8200Ω	½	C22381-822	BTS-8200	
R102	100KΩ-5%	½	C22382-104	BTS-100K-5%	
R103	100KΩ-5%	½	C22382-104	BTS-100K-5%	
R104	4.7Meg	½	C22381-475	BTS-4.7Meg	
R105	470KΩ	½	C22381-474	BTS- 470K	
R106	15KΩ	½	C20302-153	BTS-15K	
R107	3300Ω	½	C22381-332	BTS- 3300	
R108	82000Ω	½	C22381-823	BTS-8200	
R109	1200Ω	½	C22381-122	BTS-1200	
R110	91KΩ-5%	½	C22382-913	BTA-91K-5%	
R111	47KΩ	½	C22381-473	BTS-47K	
R112	120KΩ	½	C22381-124	BTS- 120K	
R113	8200Ω	½	C22381-822	BTS-8200	
R114	470KΩ	½	C22381-474	BTS-470K	
R115	47Ω	½	C20061-470		
R116	22Ω	10	C23970-15	1 3/4A-225	
R117	27KΩ	2	C20302-273	BTB-27K	Note 3
R118	27KΩ	2	C20302-273	BTB-27K	Note 1
R119	27KΩ	2	C20302-273	BTB-27K	Note 1
R120	5000Ω	10	C23970-13	1 3/4A-500	
R121	3.9Ω	½	C20308-39		
R122	220KΩ	2	C25226-224		
R123	220KΩ	2	C25226-224		
R124	220KΩ	3	C25226-224		
R125	50Ω	5	C23970-6	1 3/4A-50	
R126	220KΩ	2	C20061-224	BTS- 220K	
R127	5.1Ω	½	C20308-51		

Items R88A, R88B, C88, C90A, C90B, C90C are combined in one unit.
Note 1. Not used in all models.
Note 2. Some models use a 180KΩ resistor in this application.
Note 3. Some models use a 8000Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: ARVIN Part No.	STANCOR Part No.	MERIT Part No.	CHICAGO Part No	TRIAD Part No
T1	117VAC @ 3A	680VCT @ 3A	5VAC @ 3A	6.3VAC @ 9.5A	E24654		P-3078	TP-356 †	R-36BC
		.250ADC	SEC. 4	SEC. 5					
			6.3VAC @ 5.55A	5.3VAC @ 1.2A					

† Dr.ll new mounting holes.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	SEC.	REPLACEMENT DATA: ARVIN Part No.	STANCOR Part No.	MERIT Part No.	CHICAGO Part No.	TRIAD Part No.	NOTES
T2	190Ω	1050Ω	C22446-1	A-8122 †	A-4003	TB0-3 †	A-97Y	Vert. Osc. Trans.
T3	437Ω tap @ 20Ω	36Ω tap @ 2Ω, 7Ω tap @ 20Ω, 70Ω	E24989				D-19	Horiz. Output Trans
		SEC. 2						
		0Ω						
T4	1560Ω tap @ 4.2Ω		C24990-1	A-8141	A-3039		A-104X	Vert. Output Trans.
T5A	24Ω		D24807			TY-8	Y-19	Horiz. Deflection Coils
B	46Ω							Vert. Deflection Coils

† Drill one new mounting hole

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	SEC.	DC RES. PRI.	SEC.	REPLACEMENT DATA: ARVIN Part No.	STANCOR Part No.	MERIT Part No.	CHICAGO Part No.	TRIAD Part No.	NOTES
T6	2.3KΩ	3.5Ω	198Ω	.7Ω	C23490-1	A-3823 †	A-2905 †	R0-2 †	S-4X †	† Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V C IMP.	REPLACEMENT DATA: ARVIN Part No.	JENSEN Part No.	QUAM Part No	NOTES
SP1	6"	94Ω	3.5Ω	D25479		6E94S	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	ARVIN PART No.	MERIT PART No.	IRC PART No.	
L1	Ant. Trans.	0Ω	0Ω				Channel 13
L2	Ant. Coil	0Ω					
L3	Ant. Coils	0Ω					
L4	Fil. Choke	0Ω		A22456			
L5	Neutralizing Coil	0Ω					Channel 13
L6	RF Coil	0Ω					
L7	RF Coils	0Ω					
L8	Mixer Grid Coil	0Ω					Channel 13
L9	Mixer Grid Coils	0Ω					
L10	Feedback Coil	1Ω					
L11	Osc. Plate Coil	0Ω					
L12	Osc. Coils	0Ω					
L13	Fil. Choke	0Ω		A22456		CL-1	.56 Microhenry
L14	Fil. Choke	.2Ω					
L15	Conv. Plate	.1Ω					Includes Trap
L16	1st Video IF	0Ω		C25410			
L17	Fil. Choke	0Ω		A23095			Includes Trap
L18	2nd Video IF	0Ω		C25411			
L19	Fil. Choke	0Ω		A23095			Includes Trap
L20	3rd Video IF	0Ω		C25412			20 Microhenries; Wound on 18KΩ Resistor
L21	RF Choke	1.8Ω		C22500-19	TV-180*		Includes Trap
L22	4th Video IF	0Ω		C25413			20 Microhenries; Wound on 18KΩ Resistor
L23	RF Choke	1.8Ω		C22500-19	TV-180*		
L24	Cathode Trap	0Ω	0Ω	C25415			Includes Trap
L25	5th Video IF	0Ω		C25414			20 Microhenries; Wound on 12KΩ Resistor
L26	RF Choke	1.8Ω		C22500-8	TV-180‡		
L27	Series Peaking Coil	8Ω		C22500-4	TV-181▲		90 Microhenries; Wound on 33KΩ Resistor
L28	4.5MC Trap	.6Ω		C25416	TV-151		
L29	Series Peaking Coil	9Ω		C22500-17	TV-184■		180 Microhenries; Wound on 47KΩ Resistor
L30	Shunt Peaking Coil	8Ω		C22500-18			300 Microhenries
L31	1st Sound IF	1Ω		C23448			
L32	2nd Sound IF	2Ω	2Ω	C23447	TV-113		
L33	Discriminator	1.7Ω	1.6ΩCT	C23893	TV-114		
L34	Horiz. Osc.	65Ω		C23449	TV-163		
L35	Width Coil	12Ω	20Ω	C24991			

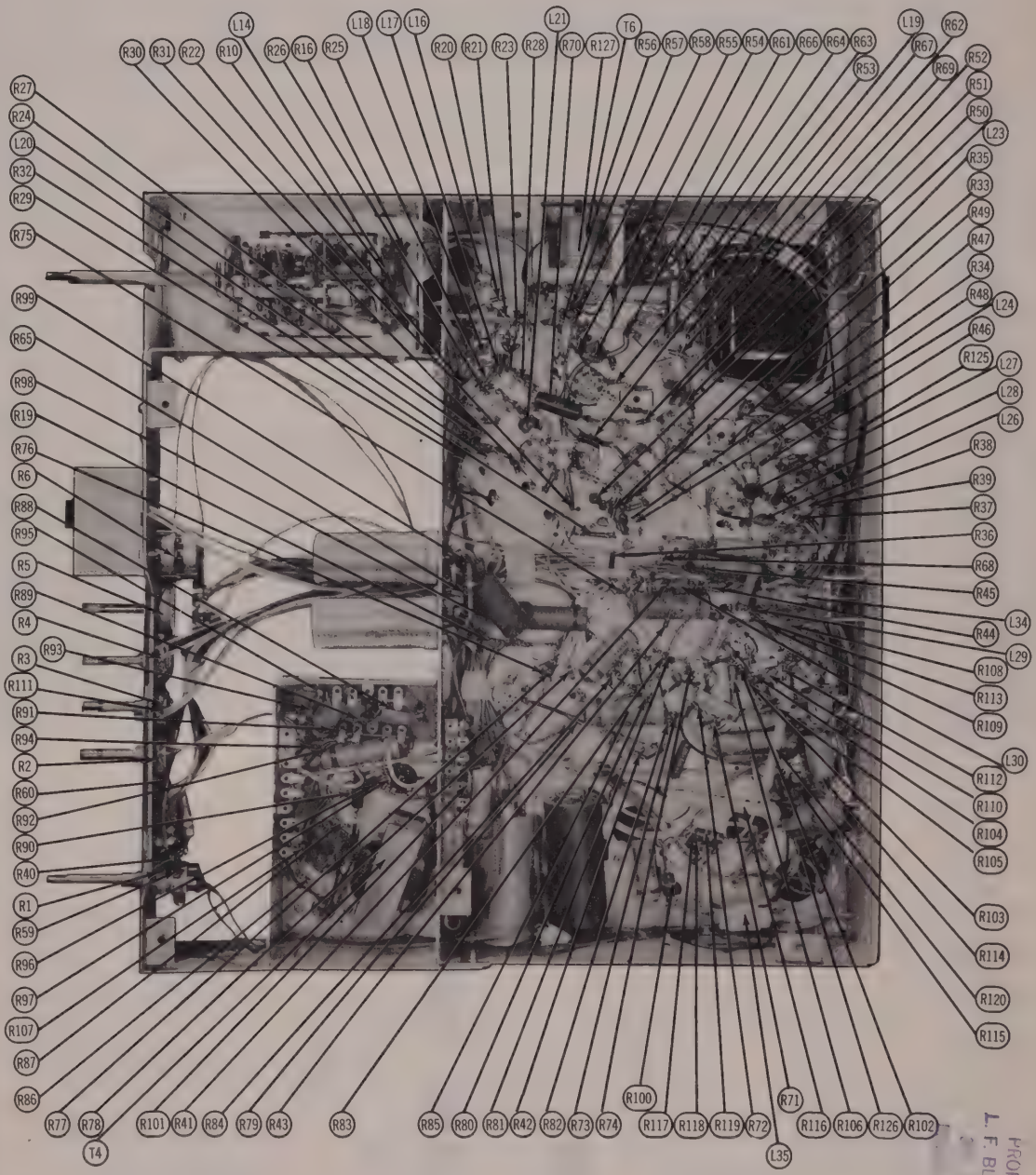
* Parallel with 18KΩ resistor.
■ Parallel with 47KΩ resistor.
‡ Parallel with 12KΩ resistor.
▲ Parallel with 33KΩ resistor.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ARVIN PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	GJV	1/4A 250V	A22493		318.250		GJV1/4	

MISCELLANEOUS

ITEM No.	PART NAME	ARVIN PART No.	NOTES
M2	RF Tuner	E25702-1	
M3	FM Trap Assembly	C-25907	
M4	IF Trap Assembly	C25255	
M5	Switch	A25525	Local-Distance, (SPDT Slide)
M6	Centering Magnet	D25626	
M7	Ion Trap	C25662-1	
B2	Trimmer Capacitor	A24528	Horizontal Drive, 40-370MMF
	Cover	R25522	Cabinet Rear
	Door and Escutcheon	E40047-1	
	Safety Glass	E24947	Tempered
	Mask	R24974	Plastic
	Knob	D25108-1	Channel Selector
	Knob	D23604	Contrast
	Knob	D23605	Fine Tuning
	Knob	D25109-1	Off/On Volume
	Knob	C24699-3	Behind Control Door (4 Used)



PROPERTY OF
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CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

DON McGOHAN MODEL MG-18B

...TY OF
L. E. D'A...

DON McGOHAN
MODEL MG-18B

DON McGOHAN
MODEL MG-18B

TRADE NAME	Don McGohan Model MG-18B
MANUFACTURER	Don McGohan, Inc., 3700 W. Roosevelt Rd., Chicago 24, Ill.
TYPE SET	AC Operated 2 Channel Audio Amplifier
TUBE (Five)	Types 6SC7 Mic Pre-Amp.-Phase Inv., 6SJ7 AF Amp., (2) 6L6G Audio Output, 5U4G Rectifier
POWER SUPPLY	110-120 Volts AC RATING .83 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

DON McGOHAN
MODEL MG-18B

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Don McGohan PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Mic Pre.Amp-Phase Inverter	6SC7	6SC7	8S	
V2	AF Amplifier	6SJ7	6SJ7	8N	
V3	Audio Output	6L6G	6L6G	7S	
V4	Audio Output	6L6G	6L6G	7S	
V5	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	Don McGohan PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲30	450		AFH4-69		UP32245C		FP430.2	TVL-3840	
B	■20	450							TVA-1205	
C	▲20	450								
D	20	25								
C2	10000			BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C3	.02	600		P688-02	DF-203	PTE6S2		PT612	6TM-S2	
C4	1000	500		1468-001	D6-102	1W5D1	GP2L-102	MC255	1FM-21	
C5	5000			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C6	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C7	.02	600		P688-02	DF-203	PTE6S2		PT612	6TM-S2	
C8	.02	600		P688-02	DF-203	PTE6S2		PT612	6TM-S2	
C9	.02	600		P688-02	DF-203	PTE6S2		PT612	6TM-S2	
C10	.05	600		P688-05	DF- 503	PTE6S5		PT615	6TM-S5	
C11	.05	600		689ZGXY-05		PJ6S5		PT615	6TM-S5	

CONTROLS

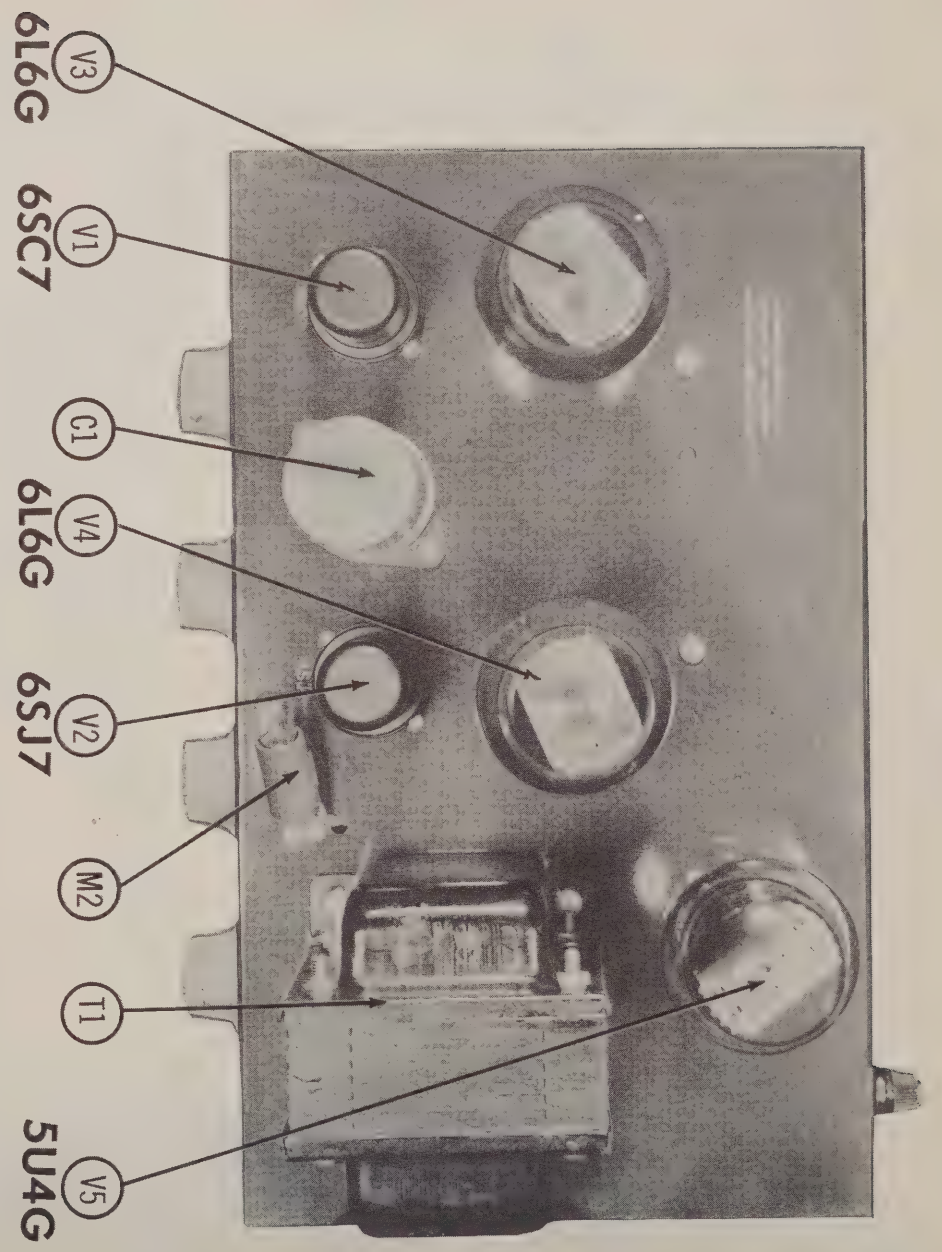
ITEM No.	RATING RESISTANCE	RATING WATTS	Don McGohan PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	BA011-301	Q13-133	AG-60-Z	B-60	U-48	Mike Volume
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A
R2A	500KΩ	½	BA011-301	Q13-133	AG-60-Z	B-60	U-48	Phono Volume
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R2A
R3A	500KΩ	½	BA011-301	Q13-133	AG-60-Z	B-60	U-48	Treble
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R3A
R4A	500KΩ	½	BA012-131	Q13-133	AG-60-Z	B-60-S	U-48	Bass
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R4A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R4A

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	Don McGohan PART No.	IRC PART No.	NOTES
R5	1Meg	½		BTS-10Meg	
R6	470KΩ	½		BTS-470K	
R7	10Meg	½		BTS-10Meg	
R8	470K	½		BTS-470K	
R9	100KΩ	½		BTS-100K	
R10	470KΩ	½		BTS-470KΩ	
R11	10Meg	½		BTS-10Meg	
R12	100Ω	½		BTS-100	
R13	2.7Meg	½		BTS-2.7Meg	

ITEM No.	RATING OHMS	RATING WATT	Don McGohan PART No.	IRC PART No.	NOTES
R14	470KΩ	½		BTS-470K	
R15	470KΩ	½		BTS-470K	
R16	12KΩ	½		BTS-12K	
R17	250Ω	5		1 3/4A-250	
R18	470KΩ	½		BTS-470K	
R19	4700Ω	½		BTS-4700	
R20	47KΩ	½		BTS-47K	
R21	10KΩ	2		BTB-10K	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	Don McGohan PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117V @ .83A	650VCT .097ADC	5VAC @ 3A	6.3VCT @ 2.6A		P-8210 ①	P-3152	PV-100 ①	R-14A ①

① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		Don McGohan PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	10.3KΩ CT	500Ω	434ΩCT	85Ω						
		SEC 2		SEC 2						
		16Ω tap @ 8Ω, 4Ω		.67Ω tap @ .5Ω, .39Ω						

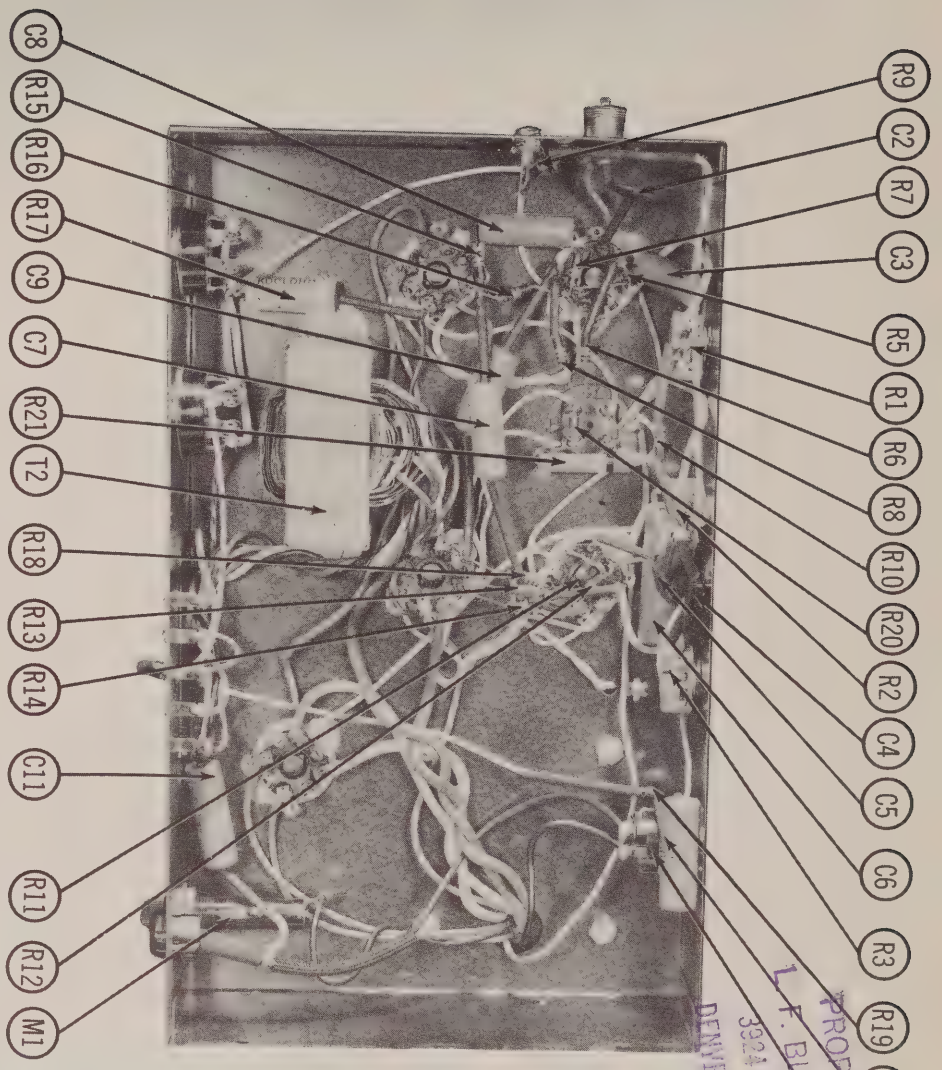
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Don McGohan PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A 250V.			312002	342001	AGC-2	HKP

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					Don McGohan PART No.		
M2	Bayonet	6-8	.15	Brown			Type No. #47

CHASSIS—BOTTOM VIEW



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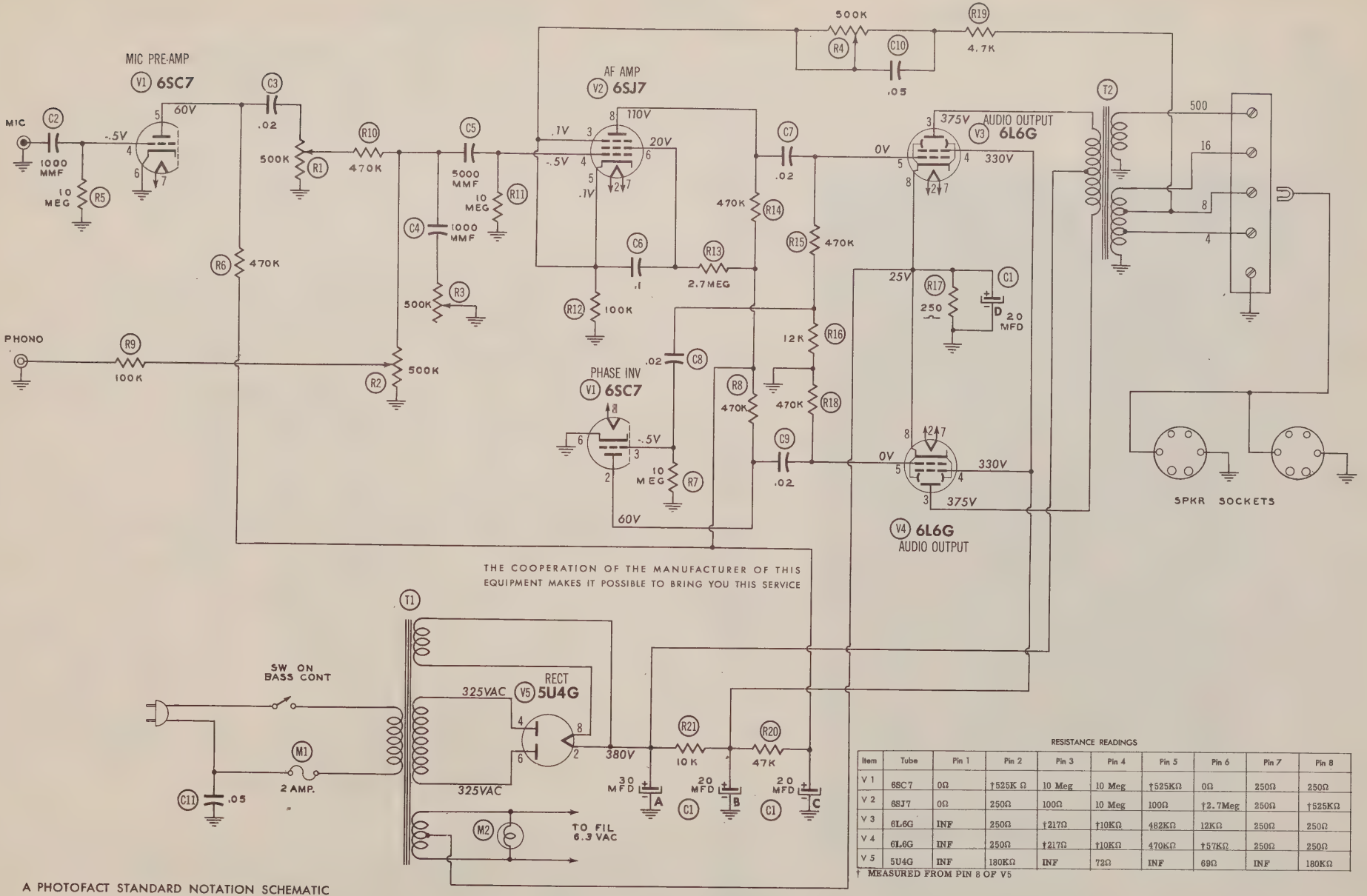
DON McGOHAN
MODEL MG-18B



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0Ω	†525K Ω	10 Meg	10 Meg	†525KΩ	0Ω	250Ω	250Ω
V 2	6SJ7	0Ω	250Ω	100Ω	10 Meg	100Ω	†2.7Meg	250Ω	†525KΩ
V 3	6L6G	INF	250Ω	†217Ω	†10KΩ	482KΩ	12KΩ	250Ω	250Ω
V 4	6L6G	INF	250Ω	†217Ω	†10KΩ	470KΩ	†57KΩ	250Ω	250Ω
V 5	5U4G	INF	180KΩ	INF	72Ω	INF	69Ω	INF	180KΩ

† MEASURED FROM PIN 8 OF V5

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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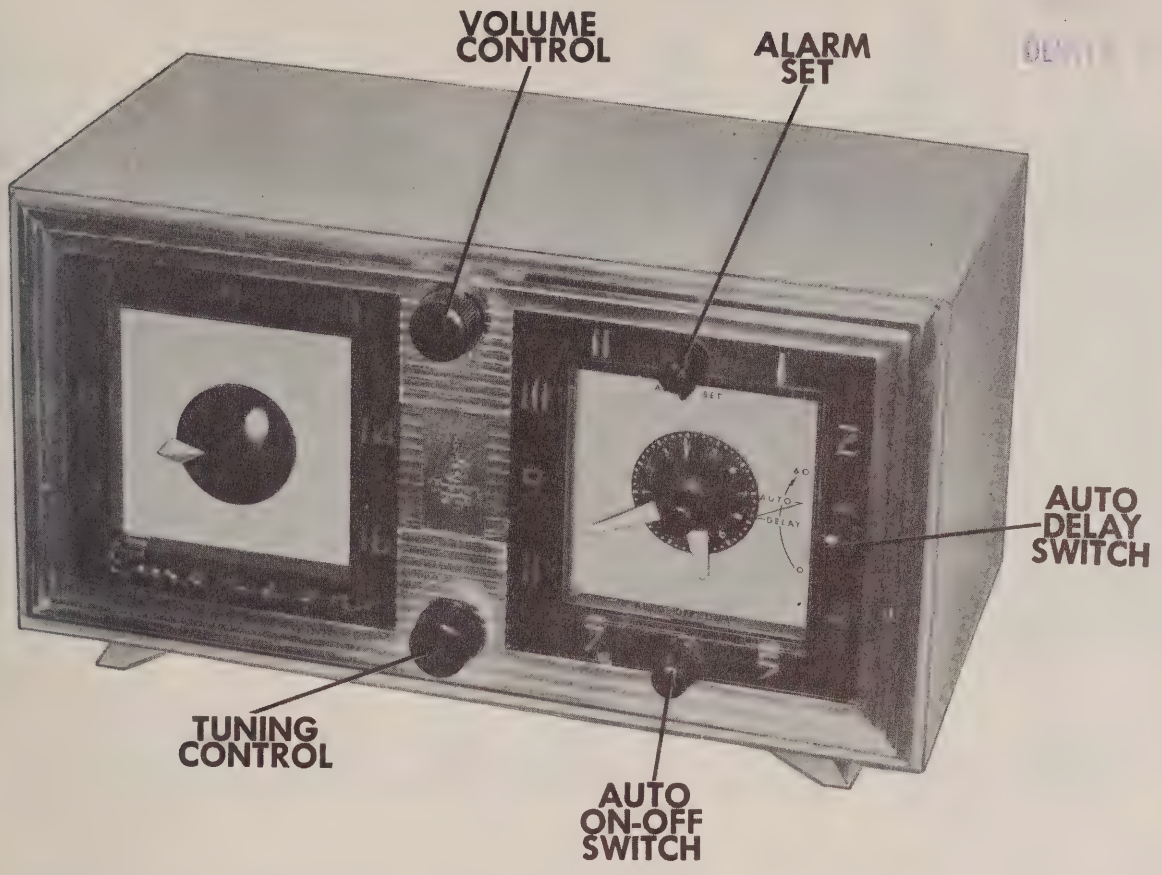
1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

EMERSON
MODEL 718B (Ch. 120150-B)



TRADE NAME	Emerson Model 718B (Ch. 120150-B)
MANUFACTURER	Emerson Radio & Phono Corp., 111 8th Ave., New York, N.Y.
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .27 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Pointer is correctly set when tuning gang is fully open and notch on rim of pointer pulley is in line with mark on pointer pulley mounting bracket.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.001MFD	High side to stator of antenna section of tuning gang. Low side to B-.	455 KC (400∿ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	200MMF	High side to external antenna lead. Low side to B-.	1620 KC	"	"	A5	"
3.	"	"	1400 KC	Tune to 1400 KC signal	"	A6	"

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1953 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

EMERSON
MODEL 718B (Ch. 120150-B)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	925212	PRS150/50-50		EDL5515A		2N521	TVA-2453	Red
B	50	150								Green
C2	.05	400	923554	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C3A	220			SI220	D6-221	5W5T25	GP2K-221	UC-5322		
B	2000		470310	BPD-002	DD-202	TM5D2	801-001	DC-522	34C3	
C	220			SI220	D6-221	5W5T25	GP2K-221	UC-5322		
D	5000			BPD-005	DD-502	TM5D5	811-005	DC-525		
C4	.02	400	923524	P488-02	DF-203	PTE412		PT412	4TM-S2	
C5	.047	400	922200	489ZX-05		PJ4147		PT4147	4TM-S47	
C6	.05	400	923554	P488-05		PTE4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	390206	Q13-133	AG-50-Z	BSK-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	22KΩ	½		BTS-22K	
R3	120Ω	½	340272	BTS-120	
R4	2.7Meg	½		BTS-2.7Meg	Note 1
R5	10 Meg	½	351452	BTS-10 Meg	
R6	470KΩ	½	351152	BTS-470K	

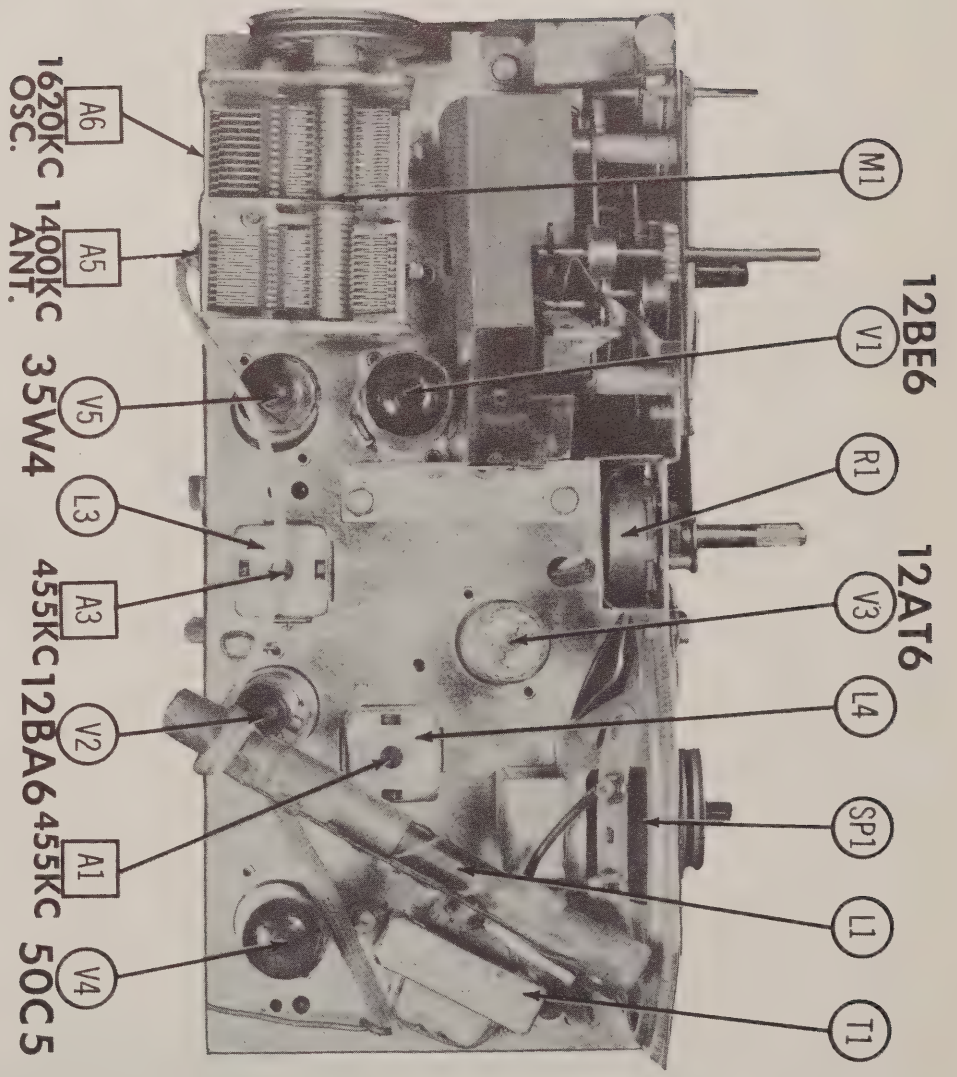
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R7	470KΩ	½	351152	BTS-470K	
R8	150Ω	½	340292	BTS-150	
R9	1500Ω	1	380532	BTA-1500	
R10	10Ω	½			Note 3
R11	10Ω	½			Note 3

Note 1. Some models use a 3.3Meg resistor in this application.
Note 2. Some models use 18Ω resistor in this application.
Note 3. Not used in all models.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	1.7KΩ	5.5Ω	150Ω	.6Ω	734068	A-3532	A-3025	R0-2 ①	S-2X ①	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

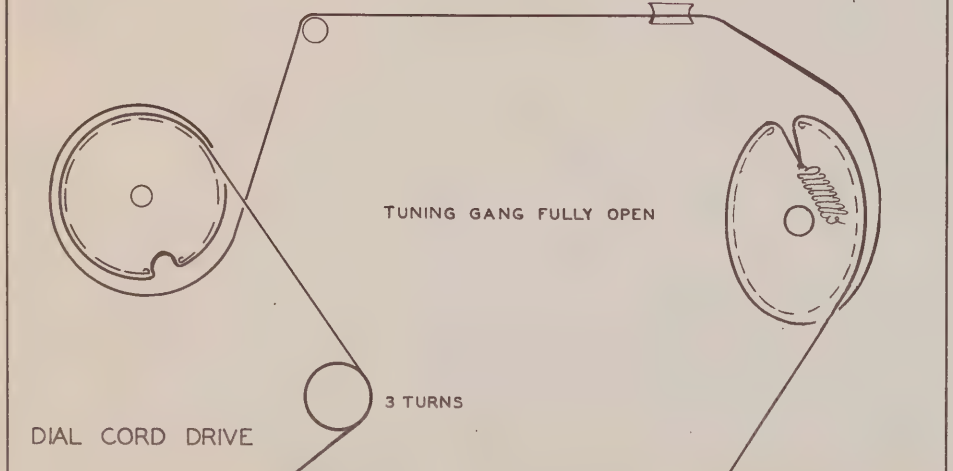
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	EMERSON PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.4Ω	180087	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

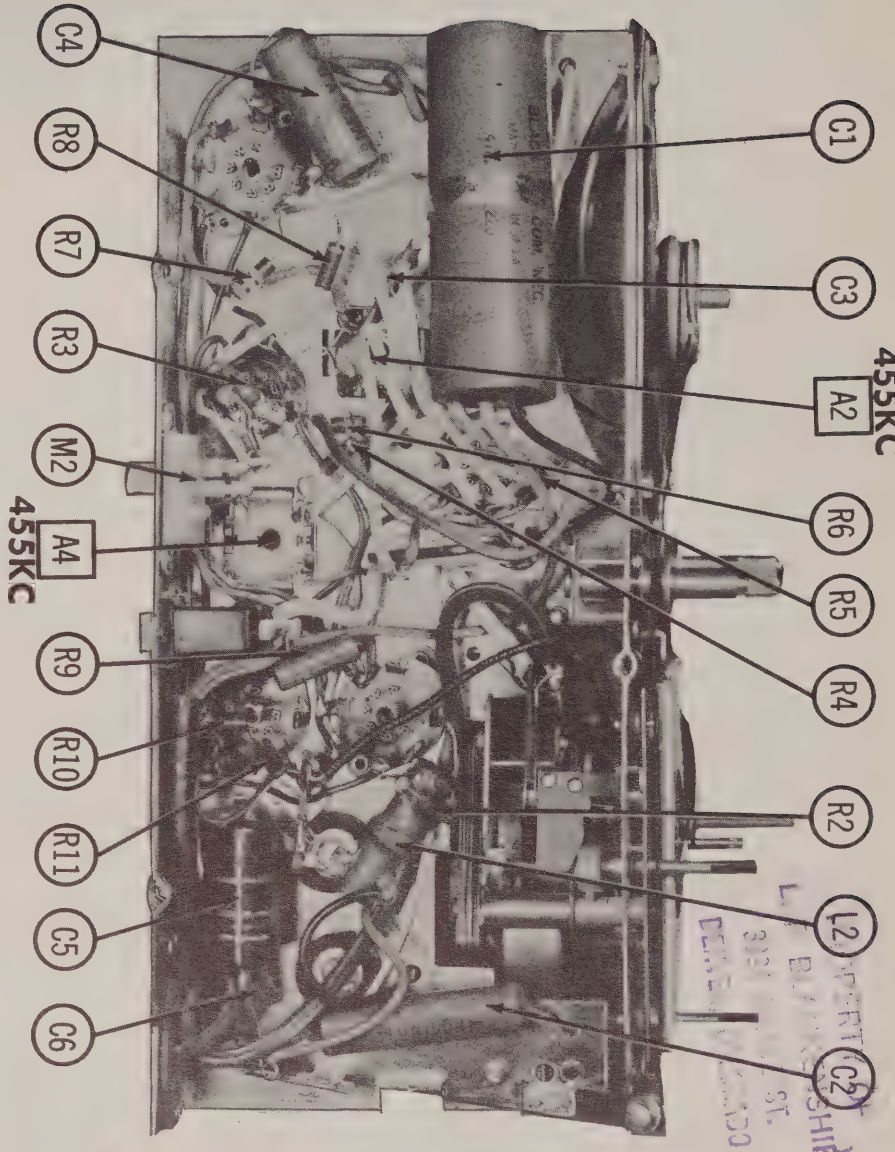
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	EMERSON PART No.	MERIT PART No.	
L1	Loop Ant.	.6Ω		700071		
L2	Osc. Coil	.9Ω	8.3Ω	716064		
L3	Input IF	22Ω	22Ω	720055	BC-352	
L4	Output IF	18Ω	19Ω	720033	BC-353	

MISCELLANEOUS

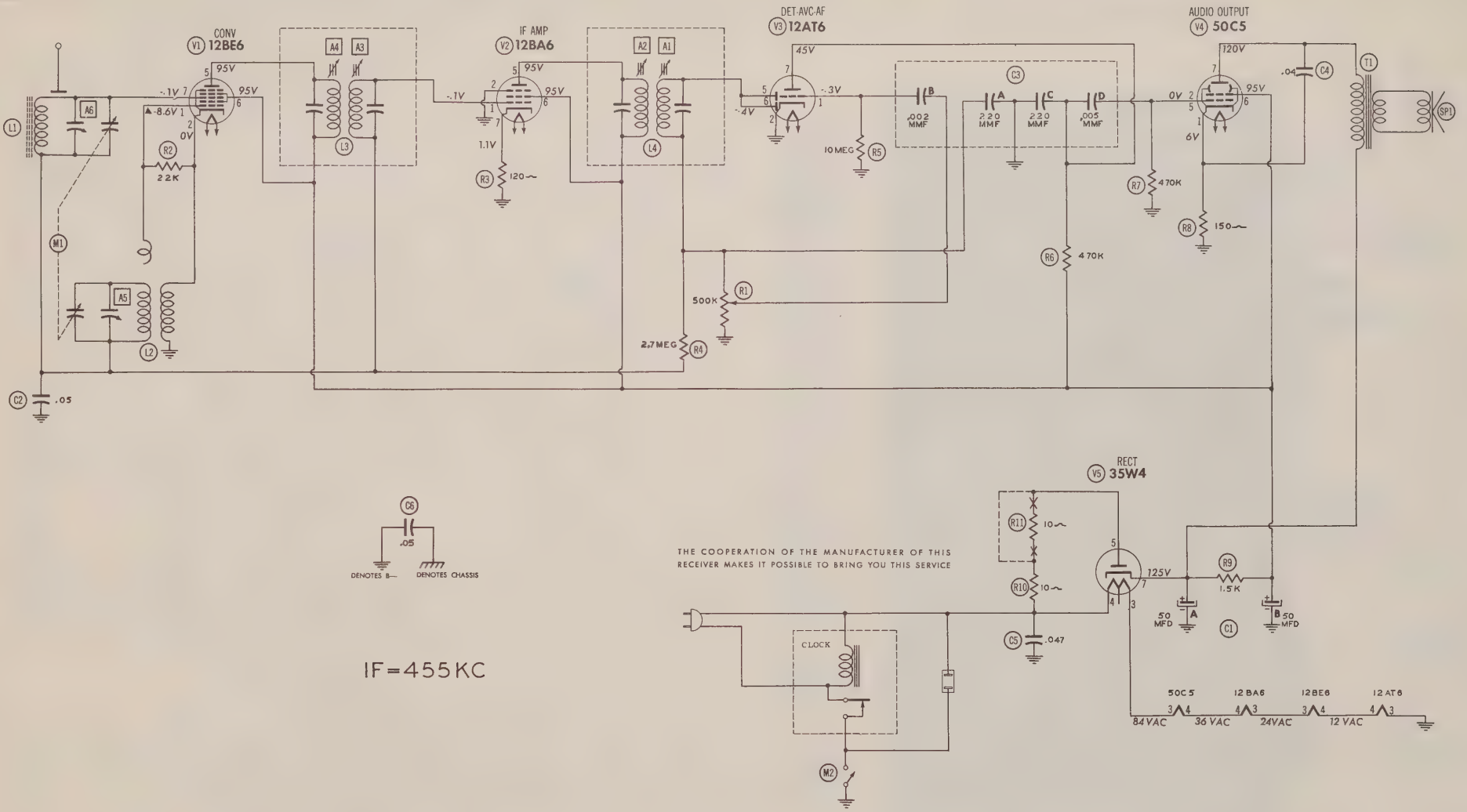
ITEM No.	PART NAME	EMERSON PART No.	NOTES
M1	Tuning Capacitor	900084	22-392MMF, 29-182MMF
M2	Switch	510083	Radio Off/On, SPST Slide.
	Clock Movement	470698	
	Cabinet	140472	Ivory
	Cabinet	140472A	Black
	Cabinet	140472B	Maroon
	Cabinet	140472C	Blue
	Cabinet	140472D	Gray
	Knob	450154	Radio (2 Used)
	Knob	460332	Clock (3 Used)
	Knob	280195	Clock Time Set
	Cabinet Front	460313	
	Cabinet Back	575895	
	Pointer	525059	



CHASSIS—BOTTOM VIEW



EMERSON MODEL 718B (Ch. 120150-B)



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

IF=455KC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	8.3Ω	24Ω	12Ω	†1.5KΩ	†1.5KΩ	3.2Meg
V 2	12BA6	3.2Meg	0Ω	24Ω	36Ω	†1.5KΩ	†1.5KΩ	120Ω
V 3	12AT6	10Meg	0Ω	0Ω	12Ω	500KΩ	500KΩ	†472KΩ
V 4	50C5	150Ω	470KΩ	86Ω	36Ω	470KΩ	†1.5KΩ	†150Ω
V 5	35W4	INF	INF	86Ω	121Ω	141Ω	114Ω	500KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN #7 OF V5.
FILAMENT RESISTANCE MEASUREMENTS TAKEN WITH RADIO "OFF/ON" SWITCH IN "OFF" POSITION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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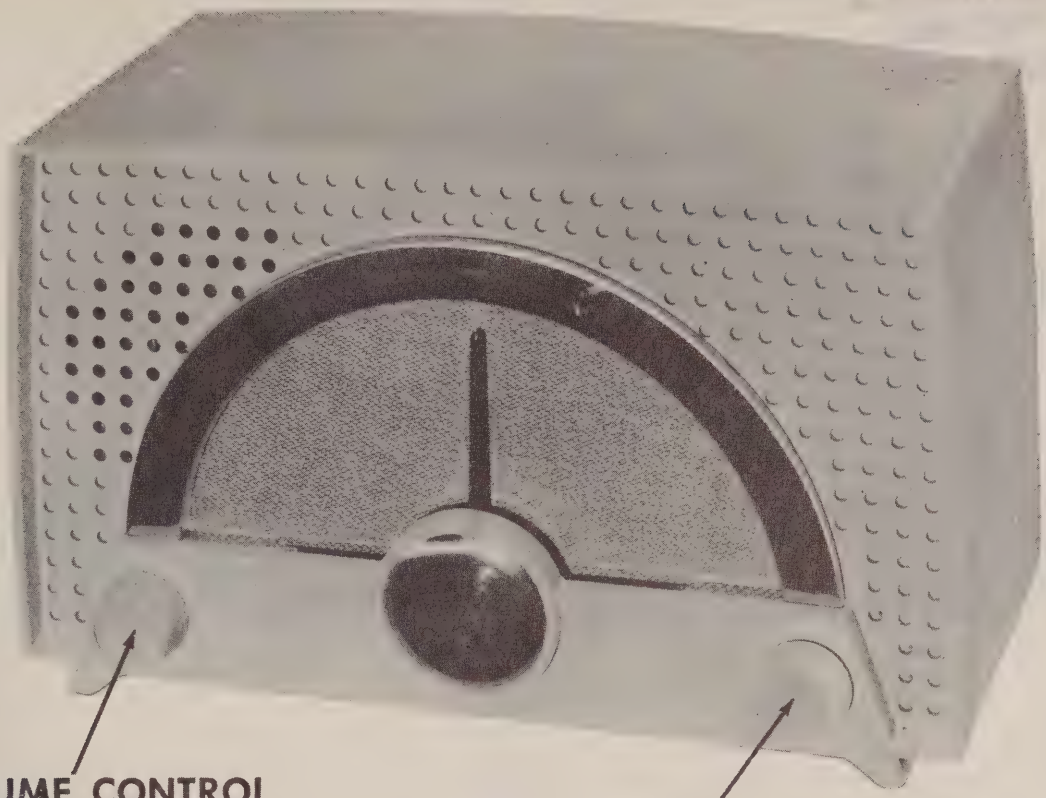
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

FIRESTONE
MODEL 4-A-108 (Code 297-2-361)

FIRESTONE
MODEL 4-A-108 (Code 297-2-361)



FIRESTONE
MODEL 4-A-108 (Code 297-2-361)

TRADE NAME	Firestone Model 4-A-108 (Code 297-2-261)
SUPPLIER	Firestone Tire & Rubber Co, 1200 Firestone Pkwy., Akron, Ohio
TYPE SET	AC/DC Operated AM Superheterodyne Receiver
TUBES (Five)	Types 12SA7GT Conv., 12SK7GT IF Amp., 12SQ7GT Det-AVC-AF Amp., 50L6GT Audio Output, 35Z5G T Rectifier.
POWER SUPPLY	110-120 Volts AC-DC — RATING .25 Amp @ 117 Volts AC
TUNING RANGE—BROADCAST	540 - 1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator plates of antenna section of tuning gang. Low side to B-	455KC (400~Mod)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620 KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal.	"	A5	"

Set pointer so that pointer tip is equal distance above chassis base at each extreme of pointer rotation.

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PARTS LIST AND DESCRIPTIONS

FIRESTONE
MODEL 4-A-108 (Code 297-2-261)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	12SA7GT	12SA7GT	8AD	
V2	IF Amplifier	12SK7GT	12SK7GT	8N	
V3	Det-AVC-AF Amp.	12SQ7GT	12SQ7GT	8Q	
V4	Audio Output	50L6GT	50L6GT	7S	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	N-7889	PRS150/50-30		BPD5315A		TCD497	TVA-2450	Blue Red
B	30	150								
C2	.05	200	N-1345	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	100		N-6015	S1100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C4	.005	600	N-4894	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C5A	.005									
B	250		♦ N-8215		♦PC-71		♦1406-02		♦104C5	
C										
C6	.01	400	N-1344	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C7	.05	400	N-1346	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C8	.05	200	N-1345	P288-05	DF-503	PJ2S5		PT415	2TM-S5	

♦ Items C5A, C5B, C5C, R6A, R6B are combined in one unit.
When replacing items separately, C5B and C5C should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	N-8732	Q13-133	AG-60-Z	BSK-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: FIRESTONE PART No.	IRC PART No.	NOTES
R2	22KΩ	½	N-4025	BTS-22K	
R3	1 Meg	½	N-1262	BTS-1 Meg	
R4	33Ω	½	N-4022		
R5	6.8Meg	½	N-4028	BTS-6.8Meg	
R6A	250KΩ	½	♦ N-8215		
B	500KΩ	½			

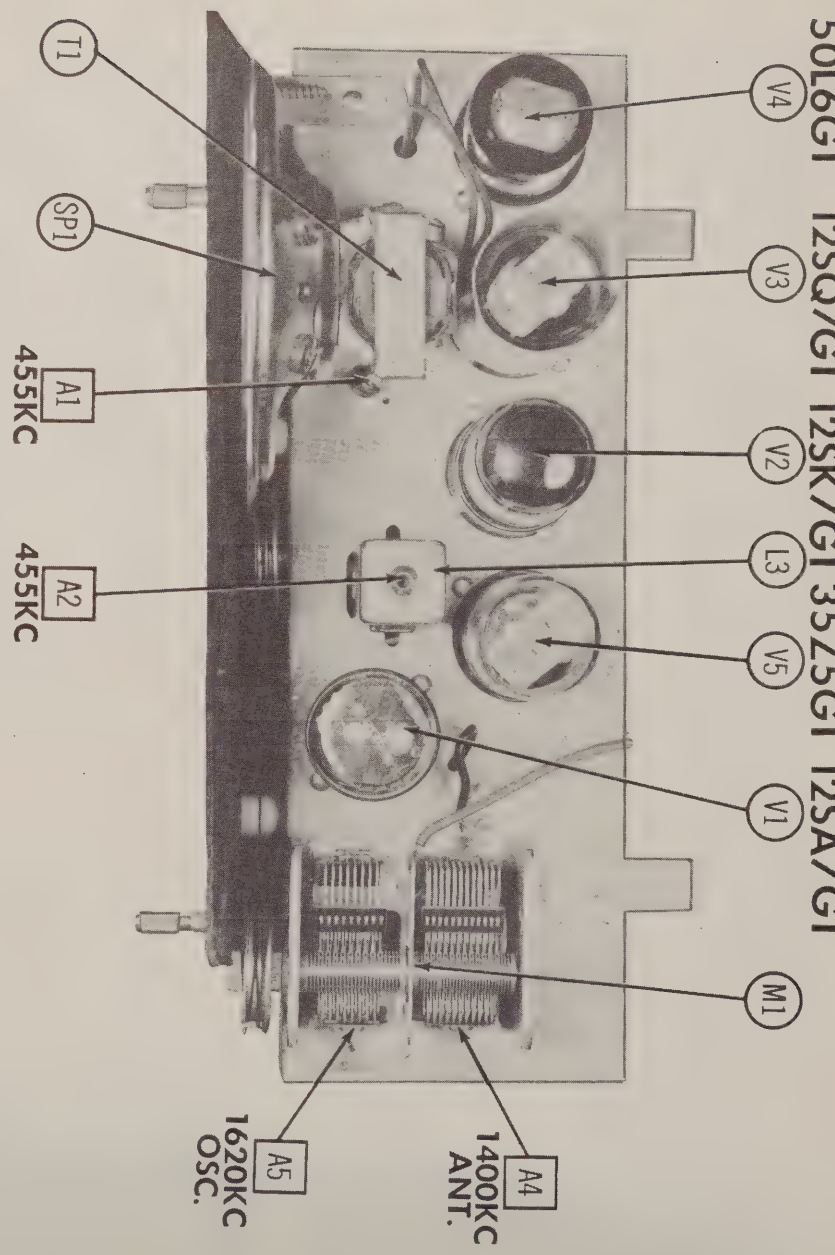
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: PART No.	IRC PART No.	NOTES
R7	220Ω	½	N-4024	BTS-220	
R8	33Ω	½	N-4022		
R9	1200Ω	1		BTA-1200	
R10	33Ω	1	N-4068		
R11	220KΩ	½	N-4026	BTS-220K	

♦ Items R6A, R6B, C5A, C5B, C5C are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: FIRESTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	1.9KΩ	2.9Ω	165Ω	.6Ω	Part of speaker	A-3332①	A-3025①	RO-2 ①	S-2X ①	① Bend mtg. tabs down, file out slots, mount on on original mounting bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

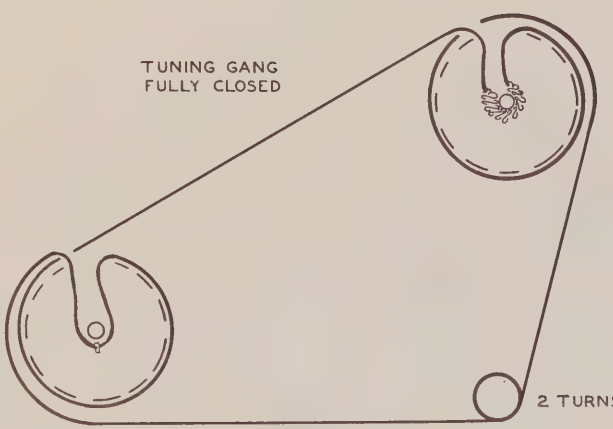
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	FIRESTONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	2.9Ω	N-7824	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	FIRESTONE PART No.	MERIT PART No.	IRC PART No.	
L1	Loop Ant.	3.4Ω		N-8740			
L2	Osc. Coil	.6Ω	7.7Ω	N-8709			
L3	Input IF	15Ω	15Ω	N-7981	BC-352		
L4	Output IF	24Ω	22.5Ω	N-8150			

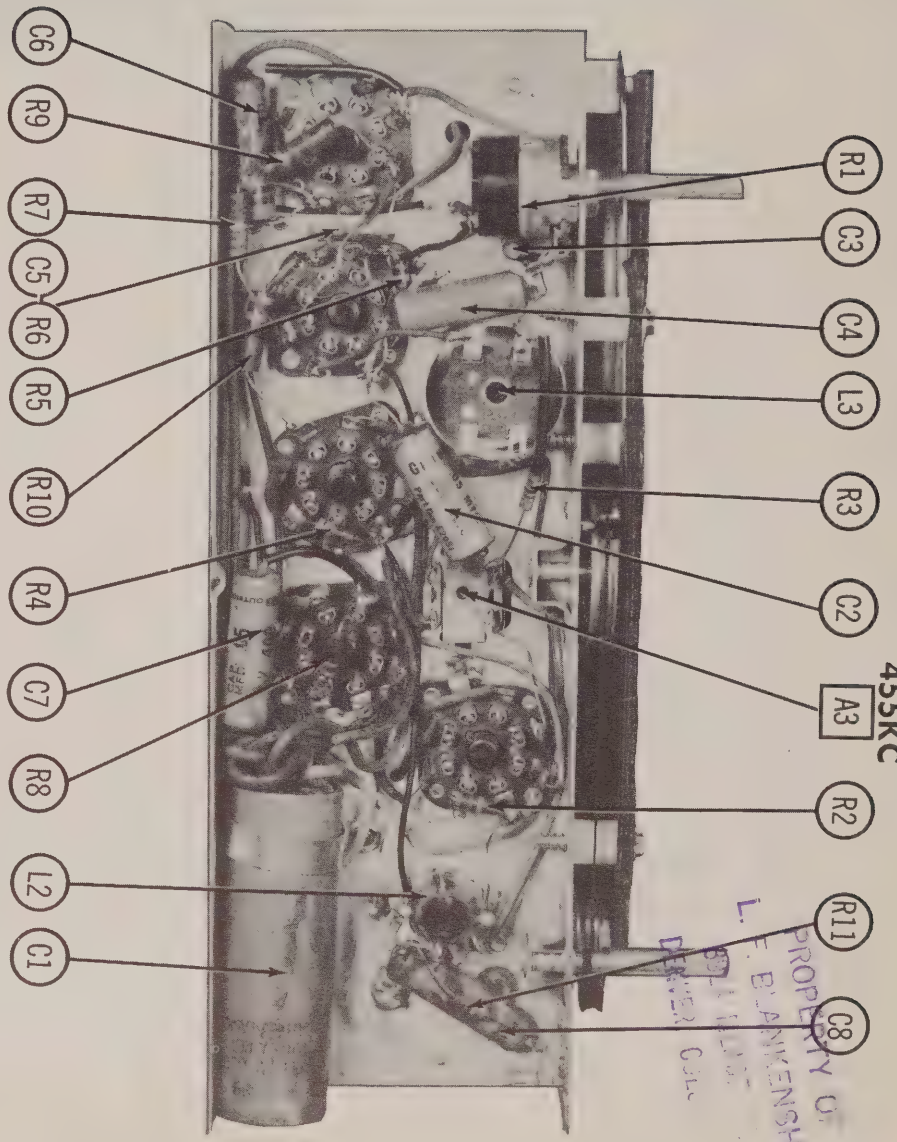
MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M1	Tuning Capacitor	N-8745	
	Cabinet	361	Plastic
	Knob	N-8733	Plastic (2 Used)
	Escutcheon	N-8735	
	Pointer	N-8737	



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



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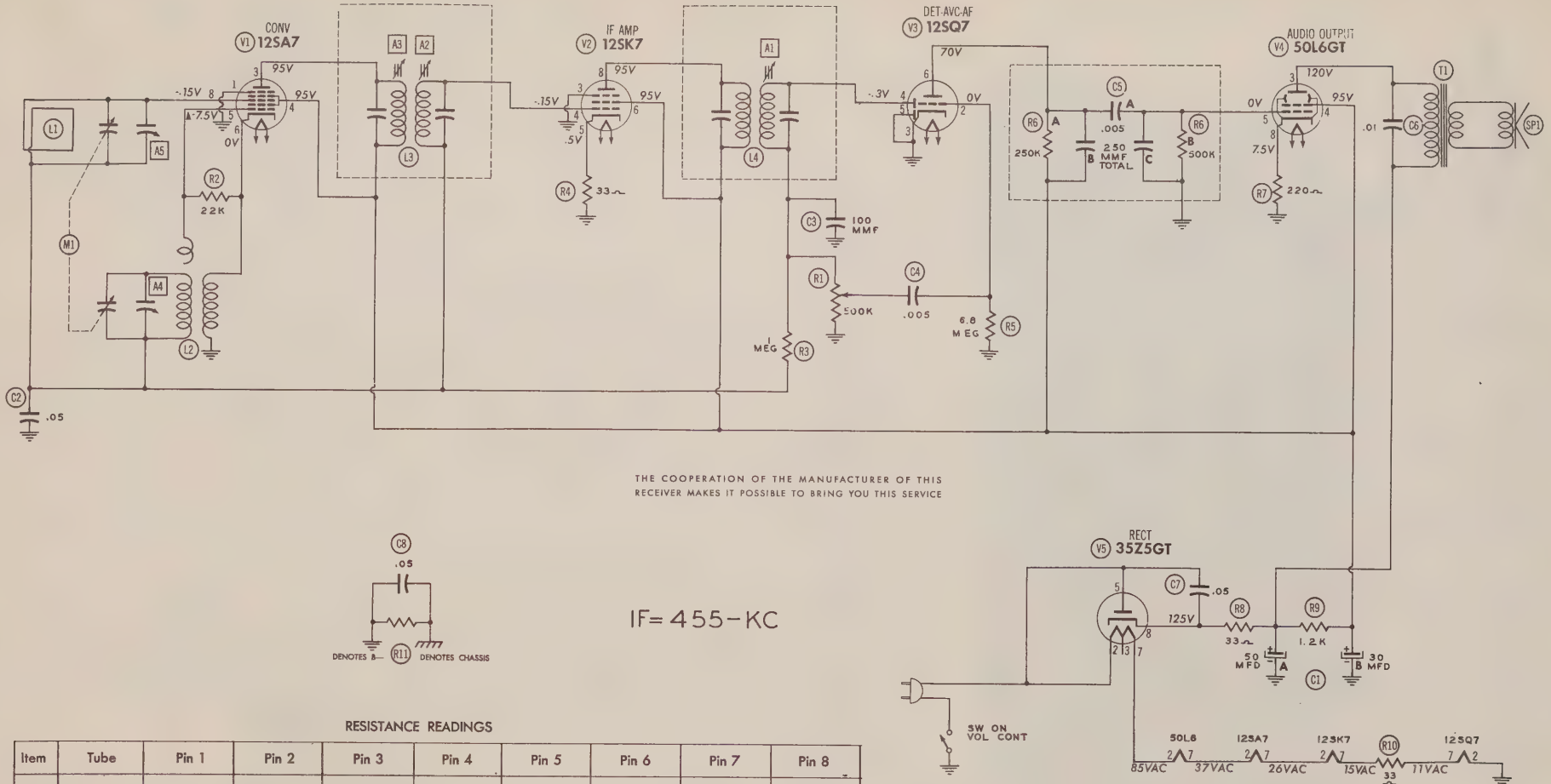
FIRESTONE
MODEL 4-A-108 (Code 297-2-261)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	220KΩ	69Ω	†1.2KΩ	†1.2KΩ	22KΩ	.6Ω	57Ω	1.5Meg
V 2	12SK7GT	220KΩ	57Ω	0Ω	1.5Meg	33Ω	†1.2KΩ	45Ω	†1.2KΩ
V 3	12SQ7GT	220KΩ	6.8Meg	0Ω	500KΩ	0Ω	†250KΩ	12Ω	0Ω
V 4	50L6GT	INF	118Ω	†198Ω	†1.2KΩ	500KΩ	†33KΩ	69Ω	220Ω
V 5	35Z5GT	INF	150Ω	145Ω	†33Ω	150Ω	0Ω	118Ω	160KΩ

† MEASURED FROM PIN 8 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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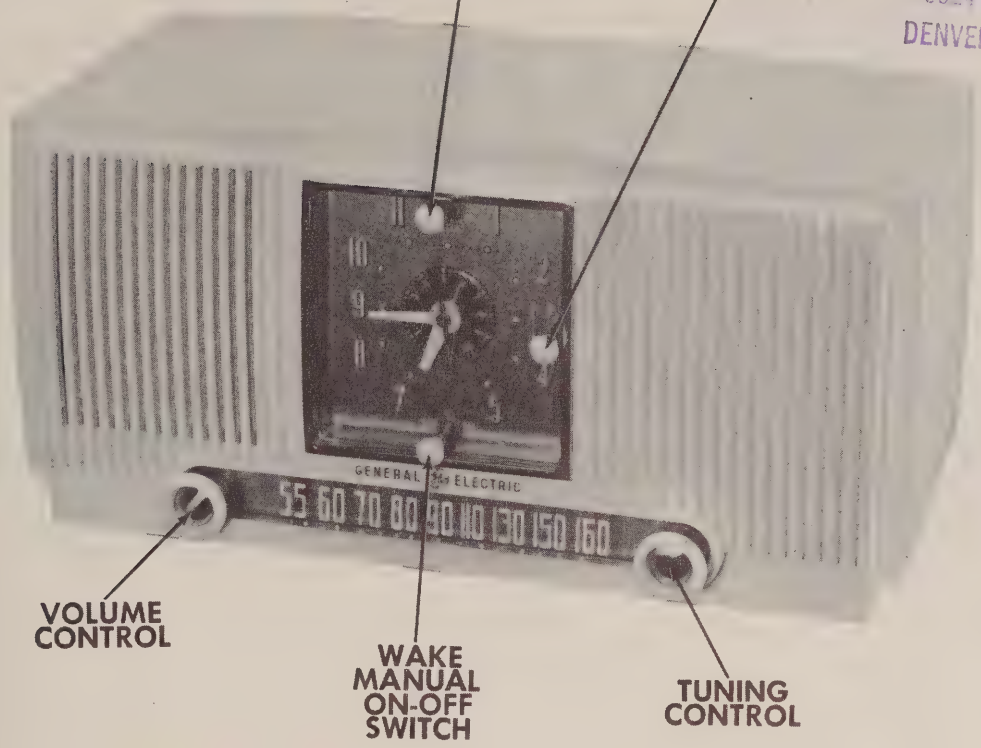
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF
L. F. BLANKENSHIP
3924 WYANDOT ST.
DENVER, COLORADO



GENERAL ELECTRIC 546, 547, 548, 549

GENERAL ELECTRIC MODEL 549

TRADE NAME	General Electric Models 546, 547, 548, 549
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, N.Y.
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier.
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING .27 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

To set pointer turn tuning gang fully closed and set pointer 3 5/16 inch from left hand end of chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 1 (grid) of 12BA6 (V2) Low iside to B-.	455KC (400 Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	High side to pin 7 (grid) of 12BE6 (V1) Low side to B-.	"	"	"	A3, A4	"
3.		Loop	1620 KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver Adjust for maximum output.
4.		"	1500KC	Tune to 1500KC signal.	"	A6	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		General-Electric PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	General Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	RCE-149	PRS150/50-50		BRD5515A		TCD49	TVA-2453	Red
B	50	150								Yellow
C2	47		RCW-3075	BPD-000047	D6-470		GP1K-470	UC-5447	5GA-Q47	
C3	.05	400	UCC-045	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C4A	400		RCW-3048	SI400	D6-401		GP2K-401	UC-534	5GA-T4	
B	2000			BPD-002	DD-202		801-002	DC-522	5HK-D2	
C	220			SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
D	5000			BPD-005	DD-502		811-005	DC-525	5HK-D5	
C5	.02	600	UCC-041	P688-02	DF-203	PTE6S2		PT612	6TM-S2	
C6	.047	600	RCN-053	689ZGXY-05		PJ6S47		PT6147	6TM-S47	
C7	.03	600		P688-03		PTE6S3		PT613	6TM-S3	Note 1
C8	.03	600		P688-03		PTE6S3		PT613	6TM-S3	Note 2

Note 1. Some Models use .05MFD in this application (Part #UCC-045)
Note 2. Not used when C7 is .05MFD.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	General-Electric PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	RRC-198	Q13-133	AG-60-Z	BSK-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	General-Elec. PART No.	IRC PART No.	
R2	22KΩ	½	URD-081	BTS-22K	
R3	68Ω	½	URD-021		
R4	2.2Meg	½	URD-129	BTS-2.2Meg	
R5	6.8Meg	½	URD-141	BTS-6.8Meg	
R6	470KΩ	½	URD-113	BTS-470K	

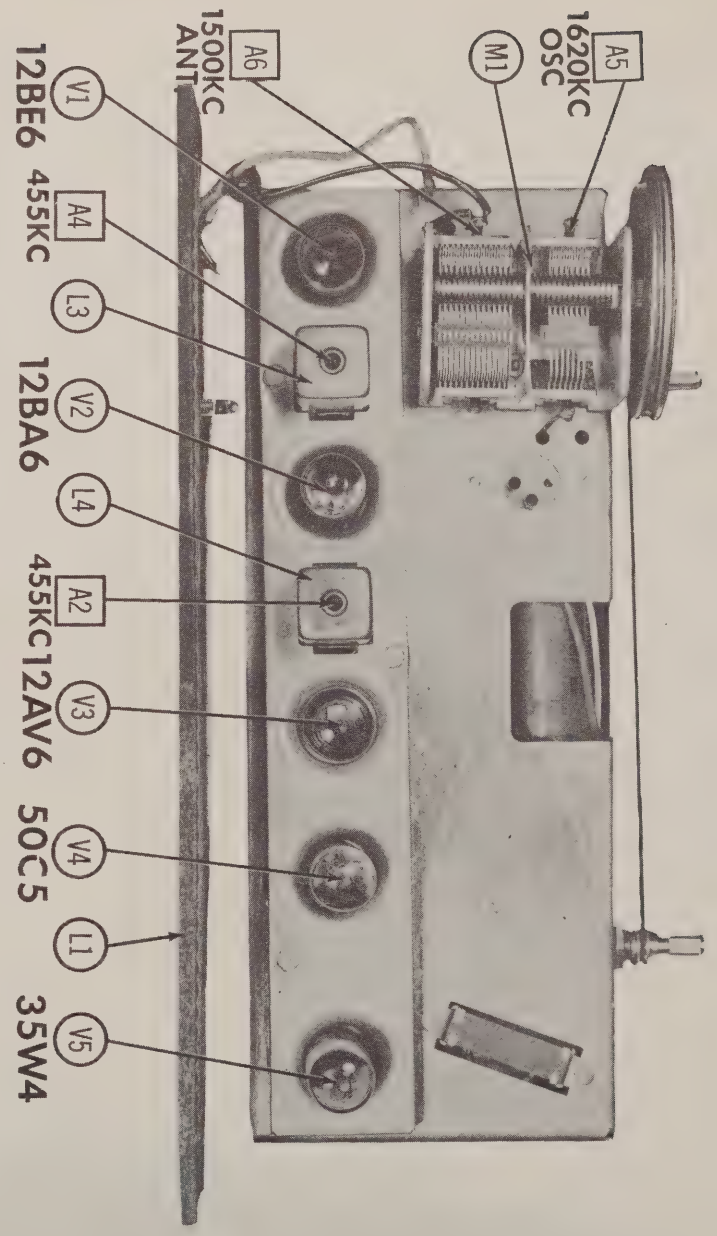
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PART No.	IRC PART No.	
R7	1 Meg	½	URD-121	BTS-1 Meg	
R8	150Ω	½	URD-029	BTS-150	
R9	1100Ω	2			Note 1
R10	18Ω	½	URD-007		

Note 1. Some models use a 1000Ω resistor in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		General-Electric PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.8KΩ	3.7Ω	250Ωtap ⓐ 12Ω	.5Ω	RTO-100	A-3330 ①	A-3031 ①	RO-3 ①		① Drill one new mounting hole .

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

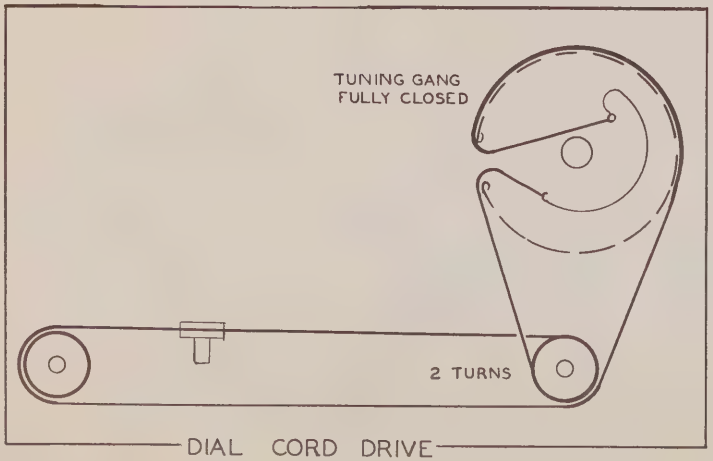
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	General-Electric PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.5Ω	S403D7	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	General-Electric PART No.	MERIT PART No.	IRC PART No.	
L1	Loop Ant.	0Ω	3.7Ω	RAB-194			
L2	Osc. Coil	.6Ω	6.3Ω	RLC-119			
L3	Input IF	14Ω	14Ω	RIL-135	BC-353		
L4	Output IF	14Ω	14Ω	RIL-135	BC-353		

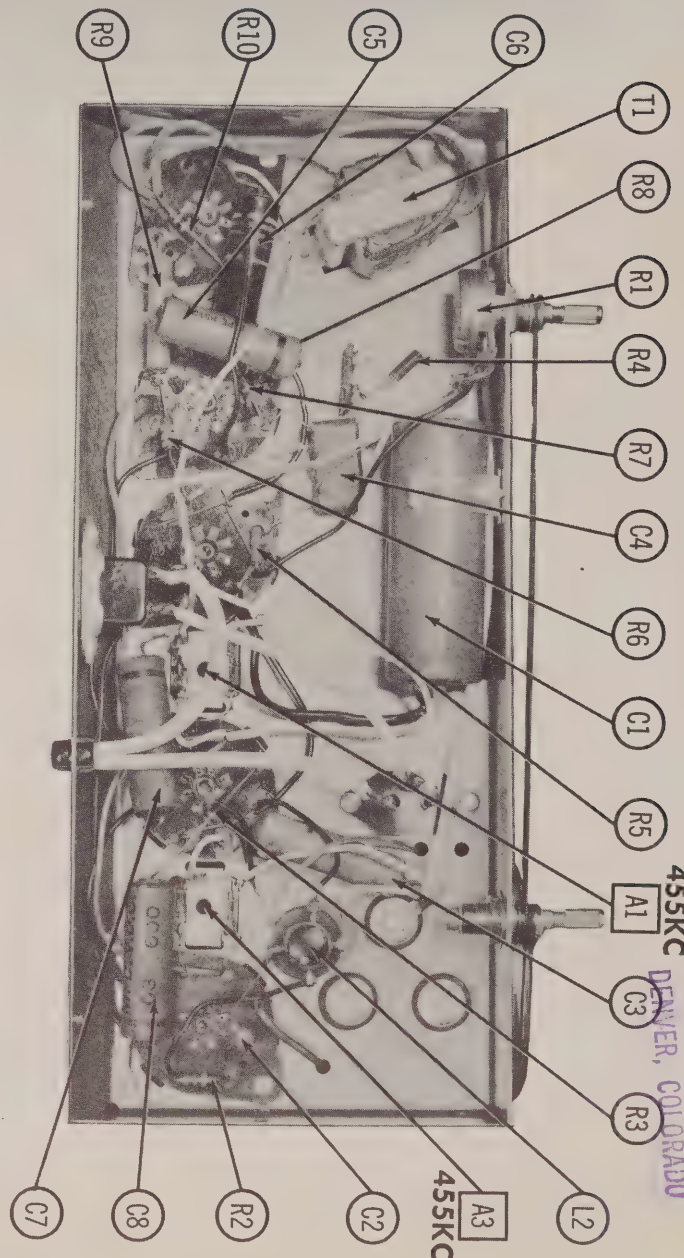
MISCELLANEOUS

ITEM No.	PART NAME	General-Electric PART No.	NOTES
M1	Tuning capacitor	RCT-063	47-490MMF, 44-200MMF
	Cabinet	RAU-365	Plastic, Motted Mahogany finish (Model 546)
	Cabinet	RAU-366	Plastic, Red finish (Model 548)
	Cabinet	RAU-367	Plastic, Ivory finish (Model 547)
	Cabinet	RAU-368	Plastic, White finish (Model 549)
	Knob	RDK-294	Volume & Tuning (Model 546)
	Knob	RDK-295	Volume & Tuning (Model 547 & 548)
	Knob	RDK-296	Volume & Tuning (Model 549)
	Knob	RZK-008	Alarm or Off/On Switch (Model 546)
	Knob	RZK-009	Alarm or Off/On Switch (Model 547 & 548)
	Knob	RZK-010	Alarm or Off/On Switch (Model 549)
	Dial Scale	RDS-119	
	Pointer	RDP-074	
	Clock Assembly	RZC-023	60 Cycle (Less Bezell & Crystal)
	Bezel	RZA-009	Gold finish (Models 546 , 547, & 548)
	Bezel	RZA-010	Chrome finish (Model 549)
	Crystal	RZW-003	For clock



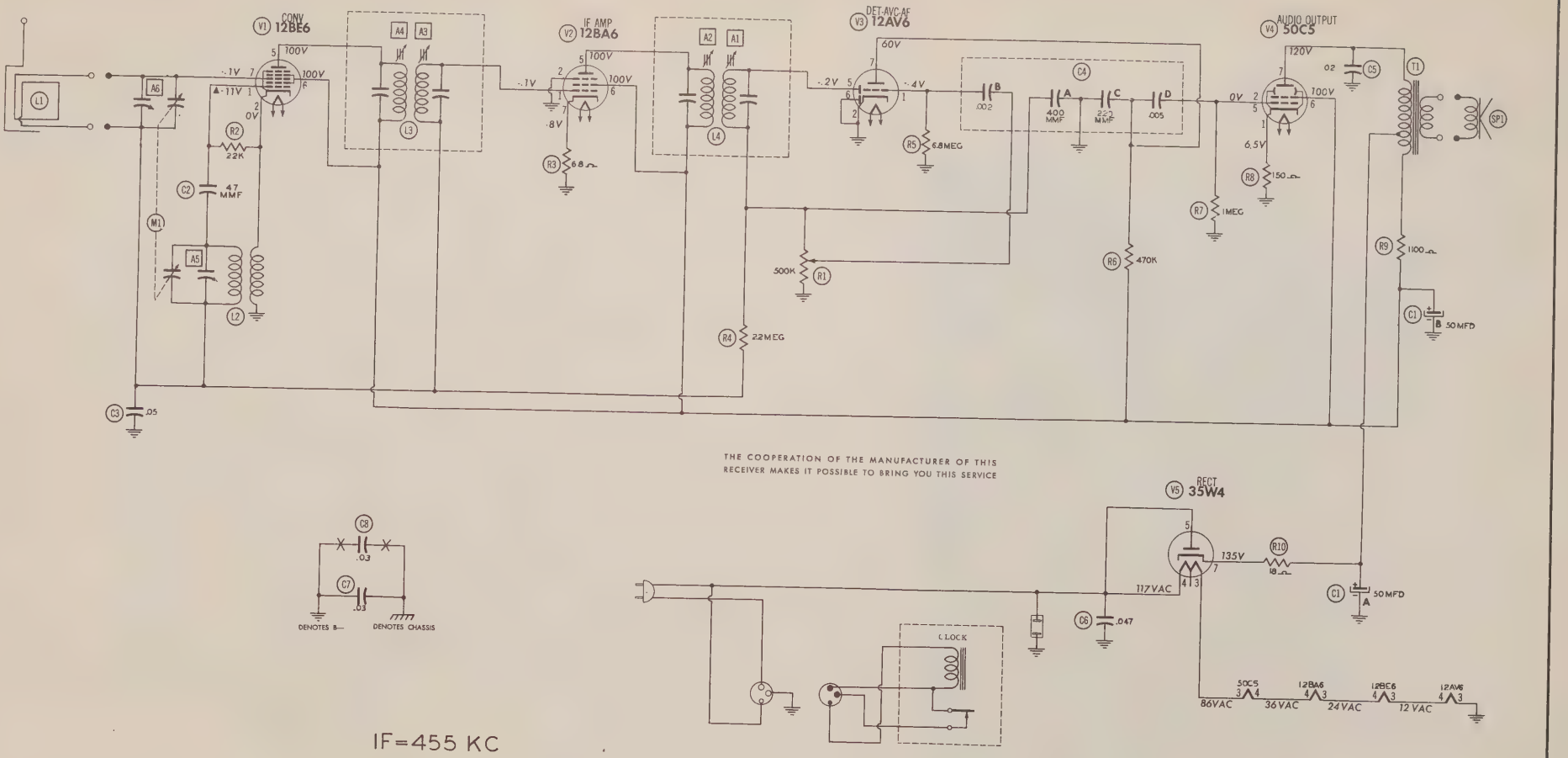
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

GENERAL ELECTRIC
MODEL 546



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

IF=455 KC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.6Ω	12Ω	24Ω	†1.1KΩ	†1.1KΩ	2.7Meg
V 2	12BA6	2.7Meg	0Ω	24Ω	36Ω	†1.1KΩ	†1.1KΩ	68Ω
V 3	12AV7	6.8Meg	0Ω	0Ω	12Ω	500KΩ	0Ω	†470KΩ
V 4	50C5	150Ω	1 Meg	86Ω	36Ω	1 Meg	†1.1KΩ	†268Ω
V 5	35W4	†30Ω	†18Ω	86Ω	121Ω	121Ω	115Ω	100KΩ

† MEASURED FROM PIN 7 OF V5

▲ TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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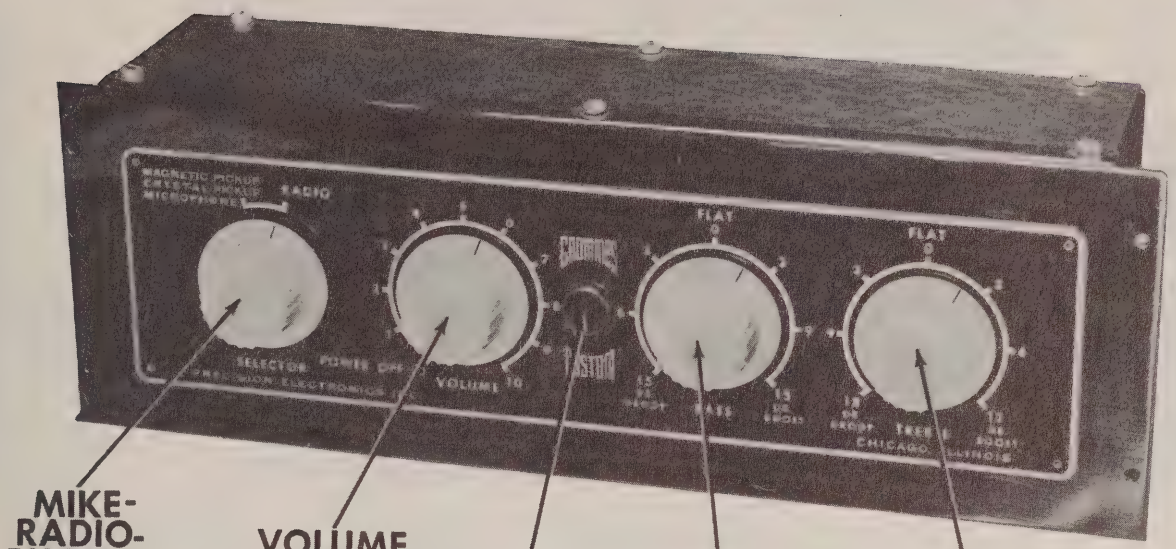
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

GROMMES
MODEL 205PA

PRO
L. F. Co.
205A
DENVER, Colo.

GROMMES
MODEL 205PA



MIKE-RADIO-PHONO SWITCH

VOLUME CONTROL ON-OFF SW

PILOT LIGHT

BASS CONTROL

TREBLE CONTROL

GROMMES
MODEL 205PA

TRADE NAME	Grommes Model 205PA
MANUFACTURER	Precision Electronics, 641 Milwaukee Ave., Chicago, Ill.
TYPE SET	4 Channel Audio Pre-Amplifier
TUBES (Two)	Types 6SL7GT Pre-Amp., 6SN7GT AF Amp.
POWER SUPPLY	275-325 Volts DC (6MA) "B" Supply & 6.3 Volts AC (1 Amp.) "A" Supply (With 10-15 Volts DC Applied at Center Tap)

THE GROMMES MODEL 117PS POWER SUPPLY COVERED IN PHOTOFACT SET 190 FOLDER 3 MAY BE USED TO POWER THIS UNIT.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

GROMMES
MODEL 205PA

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		GROMMES PART No.	STANDARD REPLACEMENT		
V1	Pre Amplifier	6SL7GT	6SL7GT	8BD	
V2	AF Amplifier	6SN7GT	6SN7GT	8BD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	GROMMES PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲10	300		AFH2-36		B029		FP225	TVL-2660	
B	■20	350								
C2	20	25		PRS25/25		BR202A		TC26	TVA-1205	
C3A	10	350		AFH3-27		C021		FP330.5	TVL-3690	
B	■10	350								
C	▲10	350						PT415	4TM-S5	
C4	.05	400		P488-05	DF-503	PTE4S5			1FM-47	
C5	68	500		1468-00007	D6-680	5W5Q7	GP1K-680		6TM-D2	
C6	.002	400		P488-002	D6-202	PTE6D2	GP2-333-202	PT622	4TM-S5	
C7	.05	400		P488-05	DF-503	PTE4S5		PT415	6TM-S3	
C8	.03	400		P488-03		PTE6S3		PT413	1FM-26	
C9	6000	500		1467-006	D6-602	1D5D6	GP2-333-602	MC467	6TM-P1	
C10	.1	600		P688-1	DF-104	PTE6P1		PT601	1FM-21	
C11	1000	500		1467-001	D6-102	1W5D1	GP2L-102	MC255	6TM-S15	
C12	.015	600		P688-015		PTE6S15		PT6115	1FM-33	
C13	270	500		1468-0003	D6-271	5W5T3	GP2K-271	MC241	1FM-24	
C14	4000	500		1467-004	D6-402	1D5D4	GP2-333-402	MC463	BP-50	
C15	.5	400		P30Z-.5		DYR6050		CB404		

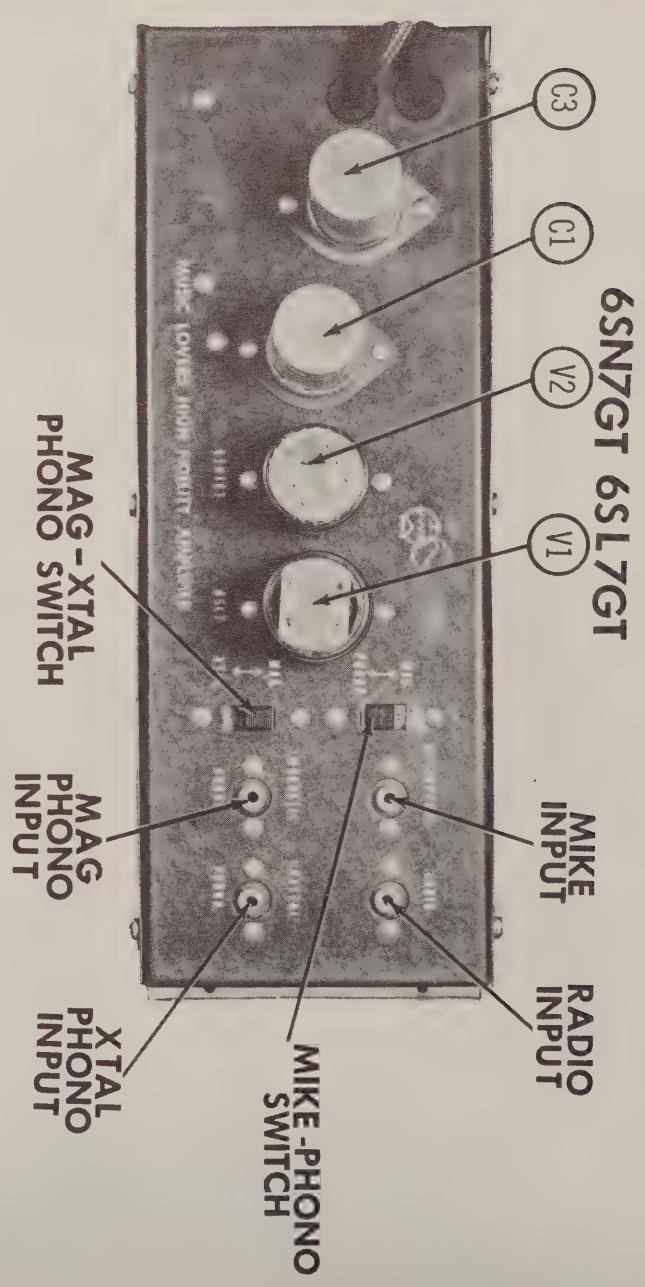
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	GROMMES PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	W-3182	Q18-133X	AT-88	BT-63-S	UT-429	Volume Tapped @ 50KΩ
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SW-A	Not Req.	US-26	Attach to R1A
R2A	1.5Meg	½	W-3181	Q13-139	AG-66-Z	B-76	U-55	Bass
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R2A
R3A	1.5Meg	½	W-3181	Q13-139	AG-66-Z	B-76	U-55	Treble
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R3A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES	ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	GROMMES PART No.	IRC PART No.			OHMS	WATT	GROMMES PART No.	IRC PART No.	
R4	47KΩ	½		BTS-47K		R16	2200Ω	½		BTS-2200	
R5	2200Ω	½		BTS-2200		R17	100KΩ	1		BTA-100K	
R6	100KΩ	1		BTA-100K		R18	22KΩ	½		BTS-22K	
R7	120KΩ	½		BTS-120K		R19	220KΩ	½		BTS-220K	
R8	2.2Meg	½		BTS-2.2Meg		R20	15KΩ	½		BTS-15K	
R9	220KΩ	½		BTS-220K		R21	270KΩ	½		BTS-270K	
R10	1 Meg	½		BTS-1 Meg		R22	22KΩ	½		BTS-22K	
R11	2200Ω	½		BTS-2200		R23	1500Ω	½		BTS-1500	
R12	100KΩ	1		BTA-100K		R24	47KΩ	1		BTA-47K	
R13	22KΩ	½		BTS-22K		R25	100KΩ	½		BTS-100K	
R14	3.3Meg	½		BTS-3.3Meg		R26	22KΩ	½		BTS-22K	
R15	22KΩ	½		BTS-22K		R27	22KΩ	½		BTS-22K	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

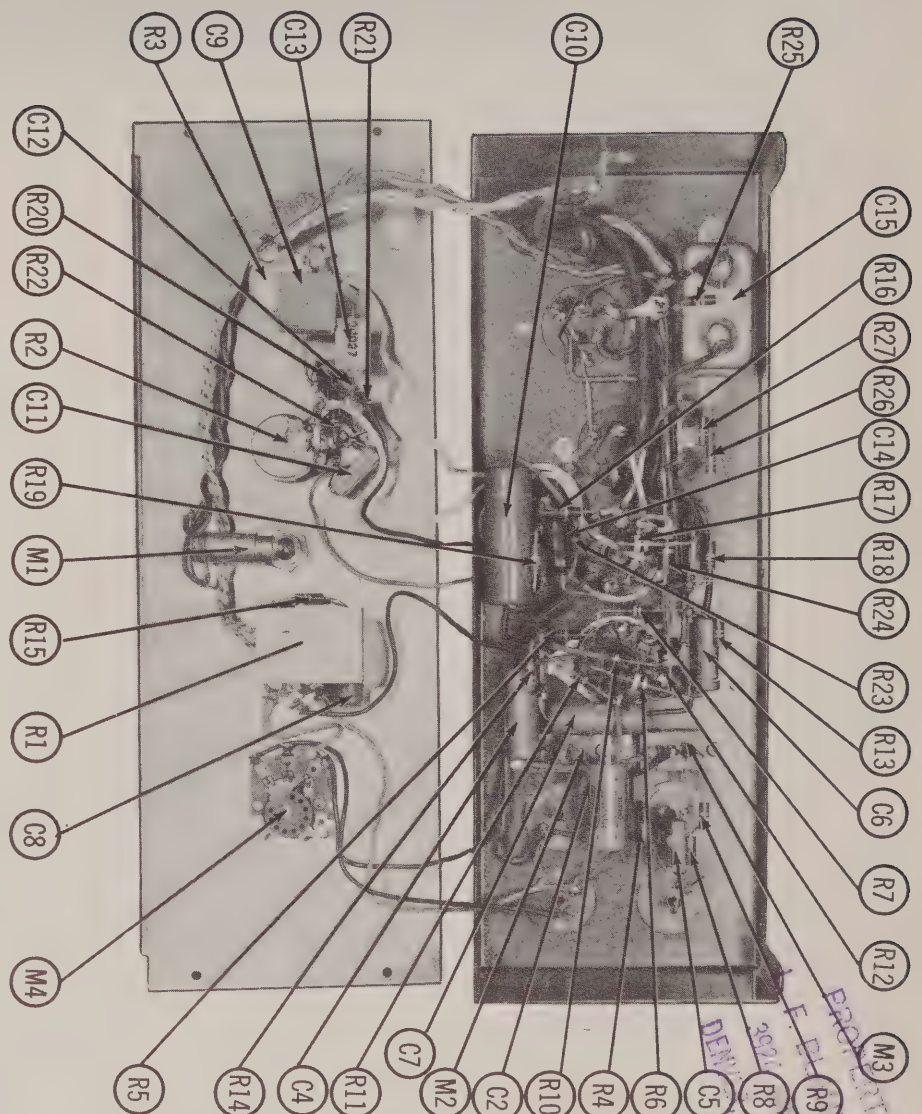
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					GROMMES PART No.		
M1	Bayonet	7.5	.2	White			Type No. #51.

MISCELLANEOUS

ITEM No.	PART NAME	GROMMES PART No.	NOTES
M2	Switch		Phono Mic.
M3	Switch		XTAL Mag.
M4	Switch		Mic. (XTAL or MAG) Phono-Radio

CHASSIS—BOTTOM VIEW



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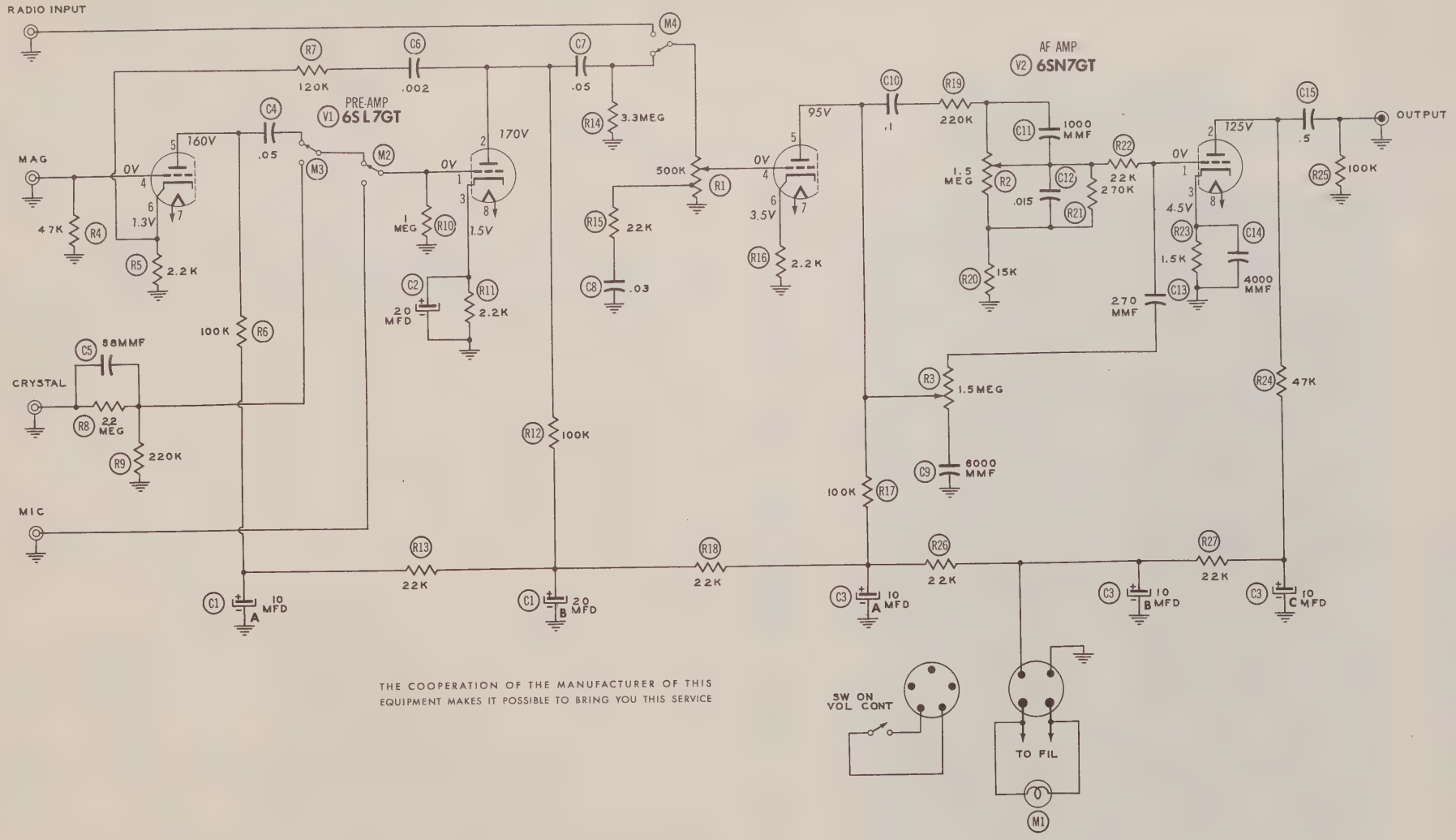

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RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SL7GT	1 Meg	†144KΩ	2.2K	47KΩ	†166KΩ	2.2KΩ	¶0Ω	¶.8Ω
V 2	6SN7GT	37KΩ	†69KΩ	1.5KΩ	0Ω	†122KΩ	2.2KΩ	¶0Ω	¶.8Ω

ALL MEASUREMENTS TAKEN WITH MIC, PHONO-RADIO SWITCH IN MIC, PHONO POSITION
† MEASURED FROM PIN 2 OF POWER PLUG
¶ MEASURED FROM PIN 1 OF POWER PLUG

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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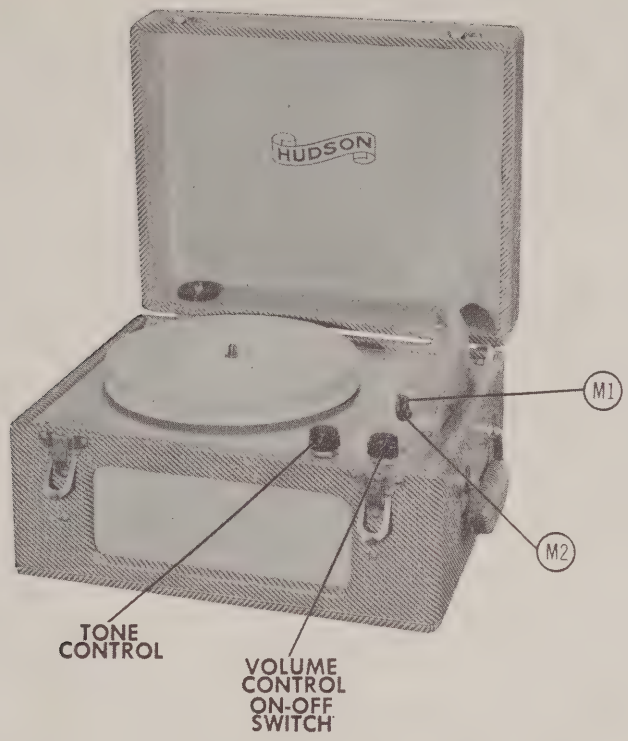
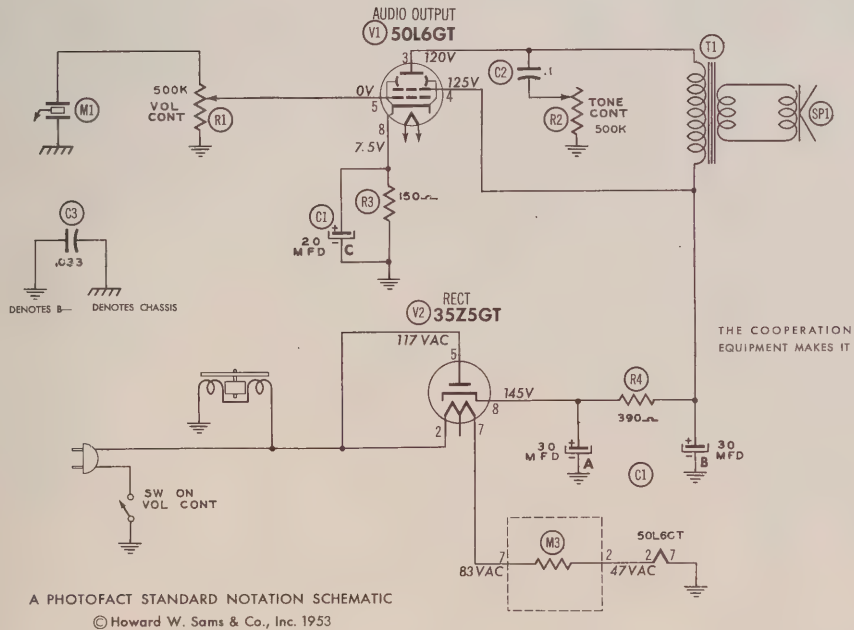
1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

HUDSON ELECTRONICS MODEL 3W

HUDSON ELECTRONICS MODEL 3W



TRADE NAME	Hudson Electronics Model 3W
MANUFACTURER	Hudson Electronics Corp., 110 E. Third St., Mt. Vernon, N.Y.
TYPE SET	AC Operated Audio Amplifier with 3 Speed Manual Record Player
TUBES (Two)	Types 50L6GT Audio Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC -60 Cycle RATING .43 Amp. @ 117 Volts AC



RESISTANCE READING

Pin No.	50L6GT V1	35Z5GT V2	Ballast Tube M3
1	INF	INF	INF
2	41Ω	28Ω	41Ω
3	†490Ω	34Ω	41Ω
4	†390Ω	INF	INF
5	7Ω	28Ω	INF
6	INF	INF	INF
7	0Ω	53Ω	53Ω
8	150Ω	110KΩ	INF

ALL MEASUREMENTS TAKEN WITH PHONO MOTOR CONNECTED
† MEASURED FROM PIN 8 OF V2

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191-11

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: HUDSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	Audio Output	50L6GT	50L6GT	7S	
V2	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HUDSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■50	150		AFH3-77		UP5315C		FP310	TVL-3430	
B	▲30	150								
C	20	25						PT601	6TM-P1	
C2	.1	600		P688-1	DF-104	PTE6P1		PT4133	6TM-S3	
C3	.033	400		P688-033		PTE6S3				

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HUDSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	BA012-051	Q13-133	AG-60-Z	B-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not REq.	US-26	Attach to R1A
R2A	500KΩ	½	BA011-127	Q13-133	AG-60-Z	B-60	U-48	Tone
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: HUDSON PART No.	IRC PART No.	NOTES
R3	150Ω	½		BTS-150	
R4	390Ω	2		BTB-390	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: PART No.	IRC PART No.	NOTES

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: HUDSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2.1KΩ	3.8Ω	100Ω	.38Ω		A-3332	A-2928	RO-2	S-2X	

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: HUDSON PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	4 x 6	PM	3.8Ω		46J6	46A07	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: HUDSON PART No.	ASTATIC PART No.: CARTRIDGE	ASTATIC PART No.: NEEDLE	SHURE PART No.: CARTRIDGE	SHURE PART No.: NEEDLE	ELECTRO-VOICE PART No.: CARTRIDGE	ELECTRO-VOICE PART No.: NEEDLE	REMARKS
M1		15L3-D	R			96-0	0-1 or S-1 & 0-3 or S-3	* Tone Arm
			R-78			* 2600		

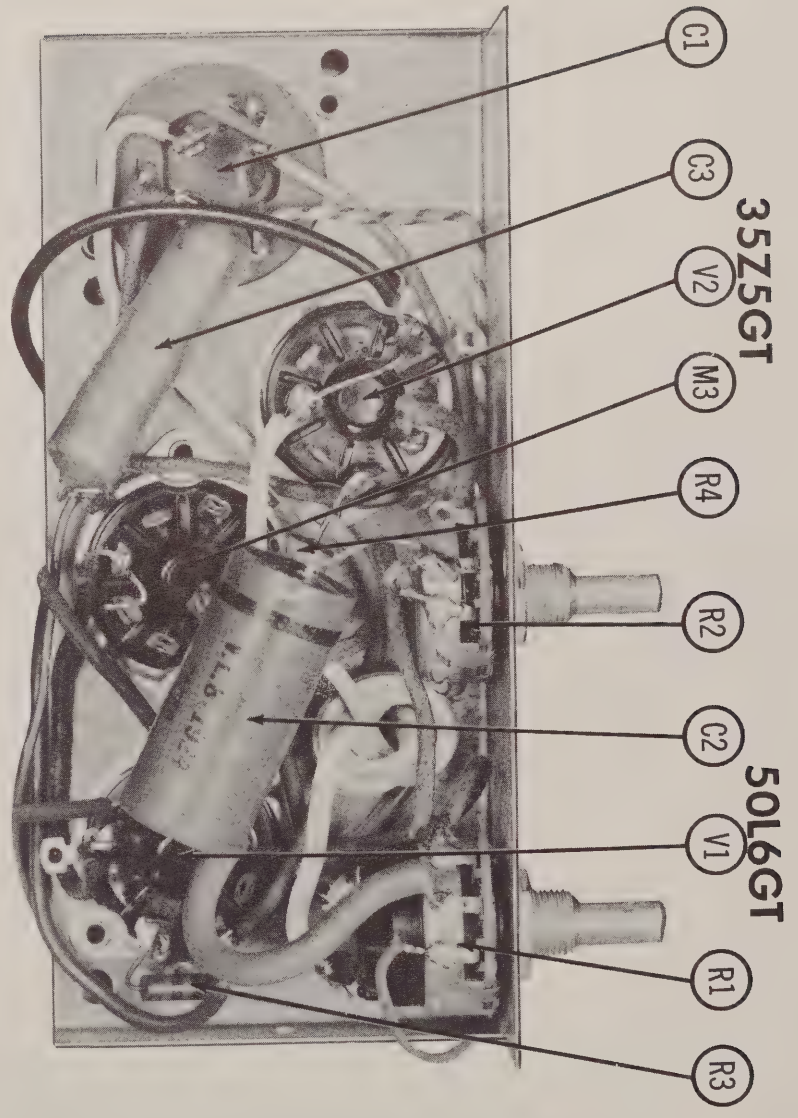
ASTATIC AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THEIR RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA: HUDSON PART No.	WALCO PART No.	JENSEN PART No.	REMARKS
M2		W-17A and W-17MGA	W-81 and W-82	

CHASSIS—BOTTOM VIEW

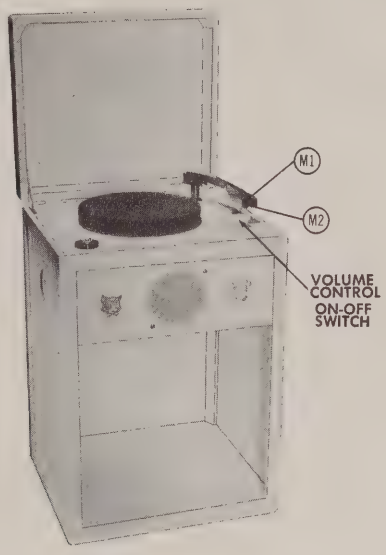


MISCELLANEOUS

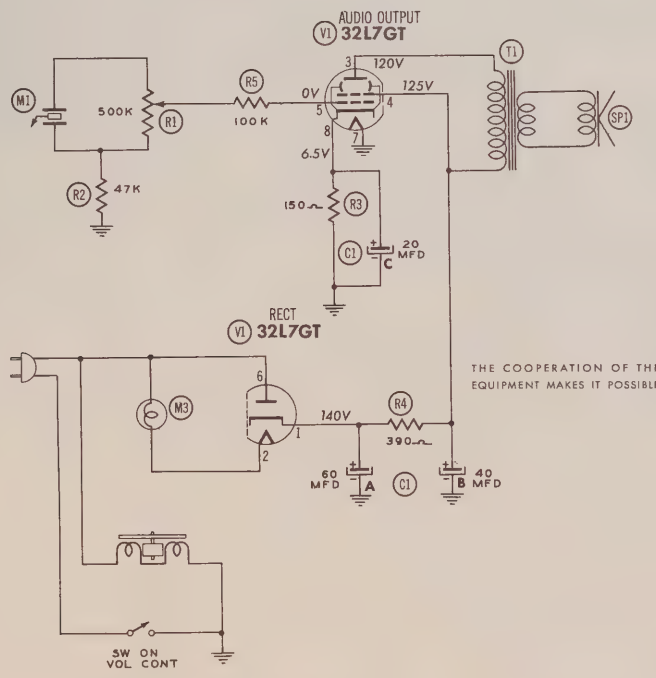
ITEM No.	PART NAME	HUDSON PART No.	NOTES
M3	Ballast Tube		250Ω (Clarostat part #23-55-F)

HUDSON ELECTRONICS
MODEL 388

HUDSON ELECTRONICS
MODEL 388



TRADE NAME	Hudson Electronics Model 388
MANUFACTURER	Hudson Electronics, 110 E. Third St., Mt Vernon, N.Y.
TYPE SET	AC Operated Phono Amplifier With 3 Speed Manual Record Player
TUBES (One)	Type 32L7GT Audio Output-Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .47 Amp. @ 117 Volts AC



Pin No.	32L7GT Res.
1	70KΩ
2	12Ω
3	†540Ω
4	†390Ω
5	150KΩ
6	18Ω
7	0Ω
8	150Ω

ALL MEASUREMENT TAKEN WITH PHONO MOTOR CONNECTED
† MEASURED FROM PIN 1 OF V1

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

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191-12

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		HUDSON PART No.	STANDARD REPLACEMENT		
V1	Audio Output - Rectifier	32L7GT	32L7GT		

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	HUDSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■60	150		AFH3-81		UP6415C		FP311	TVL-3430	
B	▲40	150								
C	20	25								

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	HUDSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	BA012-051	Q13-133	AG-60-Z	B-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	HUDSON PART No.	IRC PART No.	
R2	47KΩ	½		BTS-47K	
R3	150Ω	½		BTS-150	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PART No.	IRC PART No.	
R4	390Ω	2		BTB-390	
R5	100KΩ	½		BTS-100K	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		HUDSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.8KΩ	3.55Ω	150Ω	.4Ω		A-3332 ①	A-2928 ①	RO-2 ①	S-1X ①	① Bend mounting tabs down, file out slots, mount on original mounting bracket.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	HUDSON PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.55Ω		ST-113 Mod. P4-X	4A07	

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA						REMARKS
	HUDSON PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		16L3					* 25H60	* Tone Arm

PHONO NEEDLE

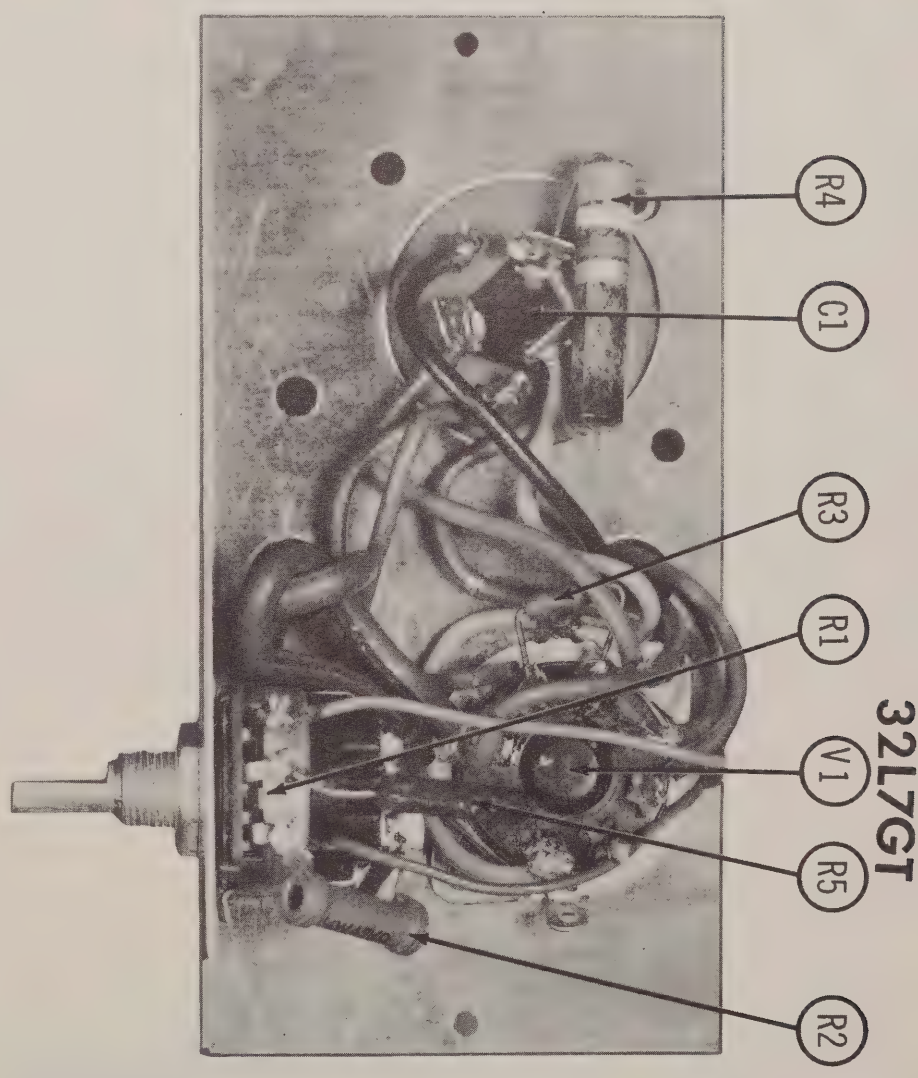
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	HUDSON PART No.	WALCO PART No.	JENSEN PART No.	
M2		WS400-2	J-752 or J-152	

MISCELLANEOUS

ITEM No.	PART NAME	HUDSON PART No.	NOTES
M3	Light Bulb		40 Watt 120 Volt

CHASSIS—BOTTOM VIEW



PHOTOFACT* Folder

MOTOROLA MODELS 21C1, B (Ch. TS-292, A, B), 21F2, B, 21F3, B (Ch. TS-292, A, B, & RADIO Ch. HS-316), 21K4, A, B, W, 21K5, B, 21K6, 21K7 (Ch. TS-292, A, B), 21T3 (Ch. TS-501A), 21T4A,EA, 21T5A, BA (Ch. TS-324, A)

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DENVER, COLORADO

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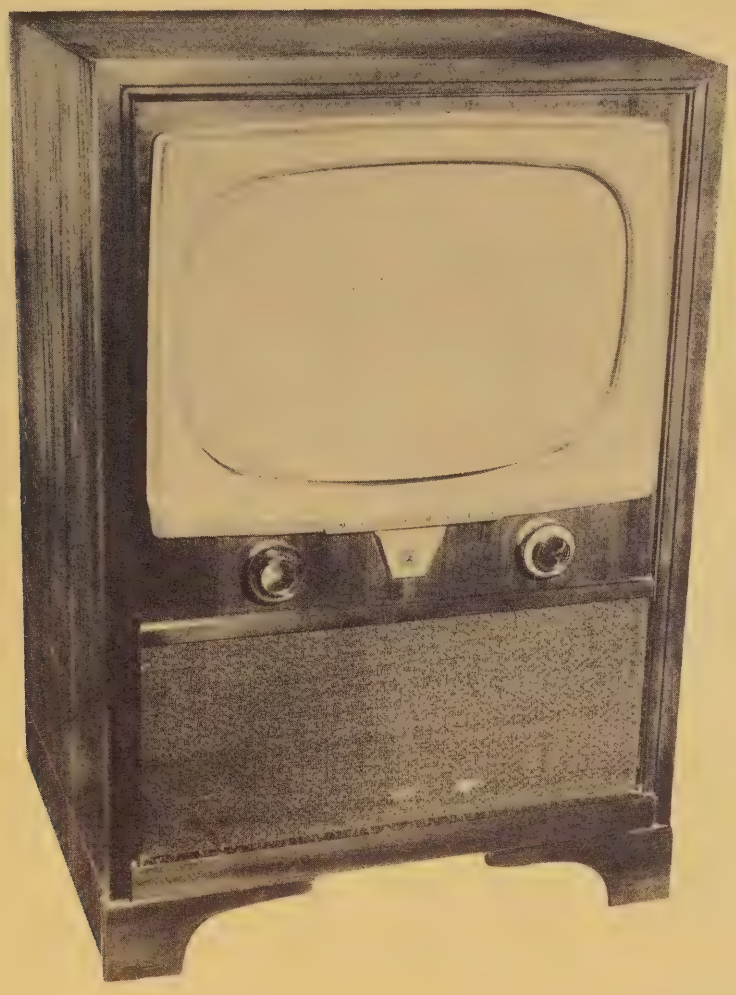
Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



MODEL 21K4

MOTOROLA MODELS 21C1, B (Ch. TS-292, A, B), 21F2, B, 21F3, B (Ch. TS-292, A, B, & RADIO Ch. HS-316), 21K4, A, B, W, 21K5, B, 21K6, 21K7 (Ch. TS-292, A, B), 21T3 (Ch. TS-501A), 21T4A, EA, 21T5A, BA (Ch. TS-324, A)

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DATE 1–53 SET 191 FOLDER 13

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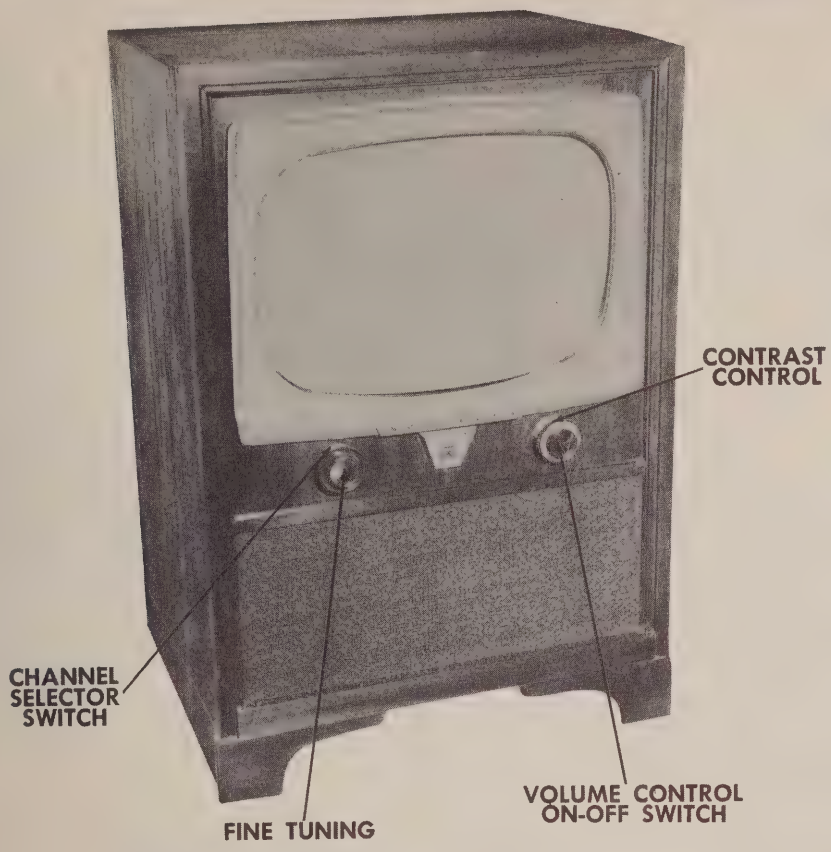
*TRADE MARK

MOTOROLA MODELS 21C1, B (Ch. TS-292, A, B), 21F2, B, 21F3, B (Ch. TS-292, A, B, & RADIO Ch. HS-316), 21K4, A, B, W, 21K5, B, 21K6, 21K7 (Ch. TS-292, A, B), 21T3 (Ch. TS-501A), 21T4A, EA 21T5A, BA (Ch. TS-324, A)



TRADE NAME	MOTOROLA MODELS	TV CHASSIS	RADIO CHASSIS
	21C1, B	TS-292, A, B	
	21F2, B 21F3, B	TS-292, A, B	HS-316
	21K4, A, B, W 21K5, B 21K6, 21K7	TS-292, A , B	
	21T3	TS-501A	
	21T4A 21T4EA 21T5A, BA	TS-324A	
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago, Ill.		
TYPE SET	Television Receiver		
TUBES	Eighteen		
POWER SUPPLY	110-120 Volts AC-60 Cycle	RATING 1.36 Amp @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13		

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Tube Failure Check Chart 5
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Tube Placement Chart (Top View) 5

For Service Information on Radio Chassis, see Model 21F1, Photofact Set 173, Folder 9. For Service Information on Record Changer, see Model RC-37, Photofact Set 141, Folder 8, or Record Changer Manual CM-4..

MOTOROLA MODELS 21C1, B (Ch. TS-292, A, B), 21F2, B, 21F3, B (Ch. TS-292, A, B, & RADIO Ch. HS-316), 21K4, A, B, W, 21K5, B, 21K6, 21K7 (Ch. TS-292, A, B), 21T3 (Ch. TS-501A), 21T4A, EA, 21T5A, BA (Ch. TS-324, A)

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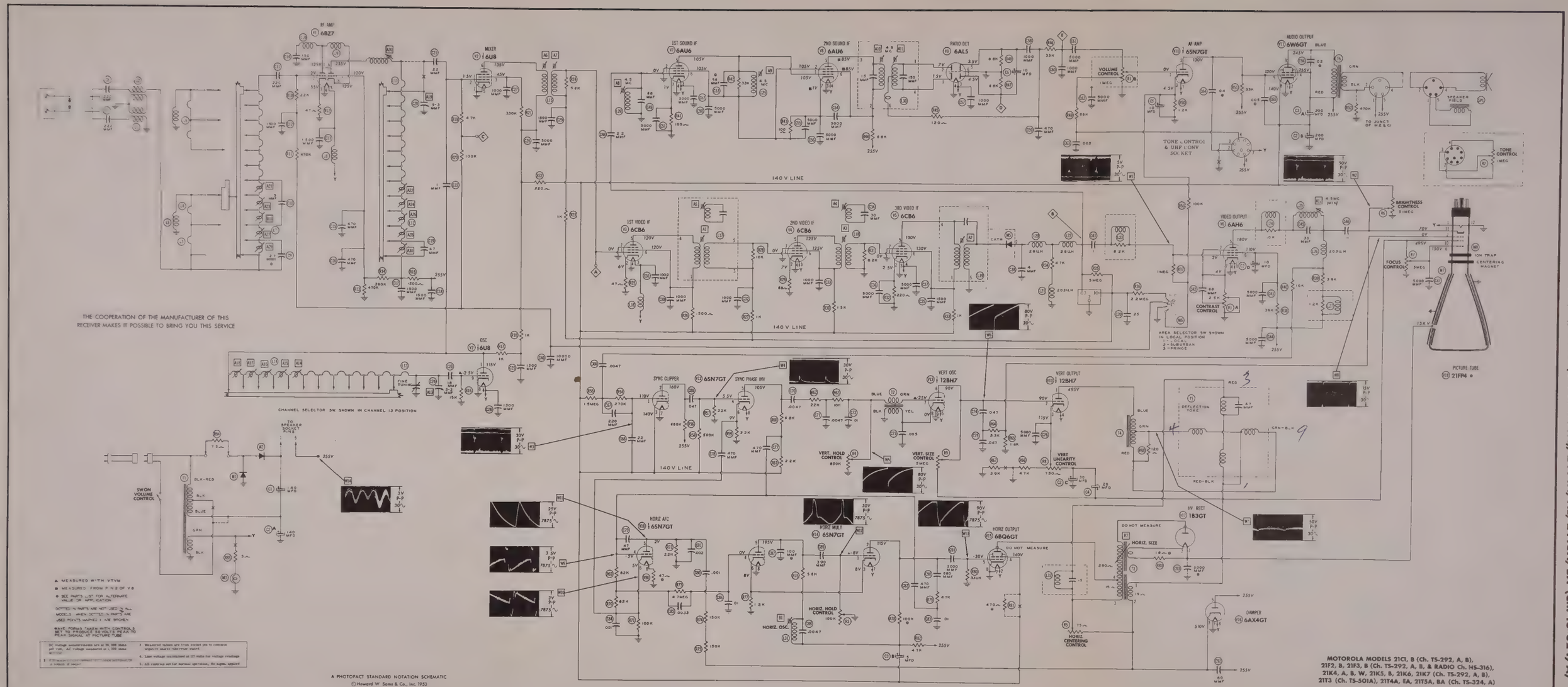
RF AMP 6BZ7
MIXER 6U8
OSC 6U8
1ST SOUND IF 6AU6
2ND SOUND IF 6AU6
RATIO DET 6AL5
AF AMP 6SN7GT
AUDIO OUTPUT 6W6GT
1ST VIDEO IF 6CB6
2ND VIDEO IF 6CB6
3RD VIDEO IF 6CB6
VIDEO OUTPUT 6AH6
SYNC CLIPPER 6SN7GT
SYNC PHASE INV 6SN7GT
VERT OSC 12BH7
VERT OUTPUT 12BH7
HORIZ AFC 6SN7GT
HORIZ MULT 6SN7GT
HORIZ OUTPUT 6BQ6GT
HV RECT 1B3GT
DAMPER 6AX4GT
PICTURE TUBE 21FP4
140 V LINE
VOLUME CONTROL
TONE CONTROL & UHF CONV SOCKET
SPEAKER FIELD
TONE CONTROL
BRIGHTNESS CONTROL
FOCUS CONTROL
ION TRAP CENTERING MAGNET
CONTRAST CONTROL
AREA SELECTOR SW SHOWN IN LOCAL POSITION
1 - LOCAL
2 - SUBURBAN
3 - PRINCE
CHANNEL SELECTOR SW SHOWN IN CHANNEL 13 POSITION
FINE TUNING
SW ON VOLUME CONTROL
VERT. HOLD CONTROL
VERT. SIZE CONTROL
VERT LINEARITY CONTROL
HORIZ. HOLD CONTROL
HORIZ. OSC.
HORIZ. SIZE
HORIZ CENTERING CONTROL
DEFLECTION YOKE
DO NOT MEASURE
TO JUNCT OF M & L'S
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A MEASURED WITH VTVM
B MEASURED FROM P.N.2 OF V8
C SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN MODELS WHEN DOTTED IN PARTS ARE USED POINTS MARKED * ARE SHOWN
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
DC voltage measurements are at 20,000 ohms per volt, AC voltage measured at 1,000 ohms per volt
1. Measured values are from socket pin to common negative source (chassis ground)
2. Line voltage maintained at 117 volts for voltage readings
3. All controls set for normal operation, No signal applied
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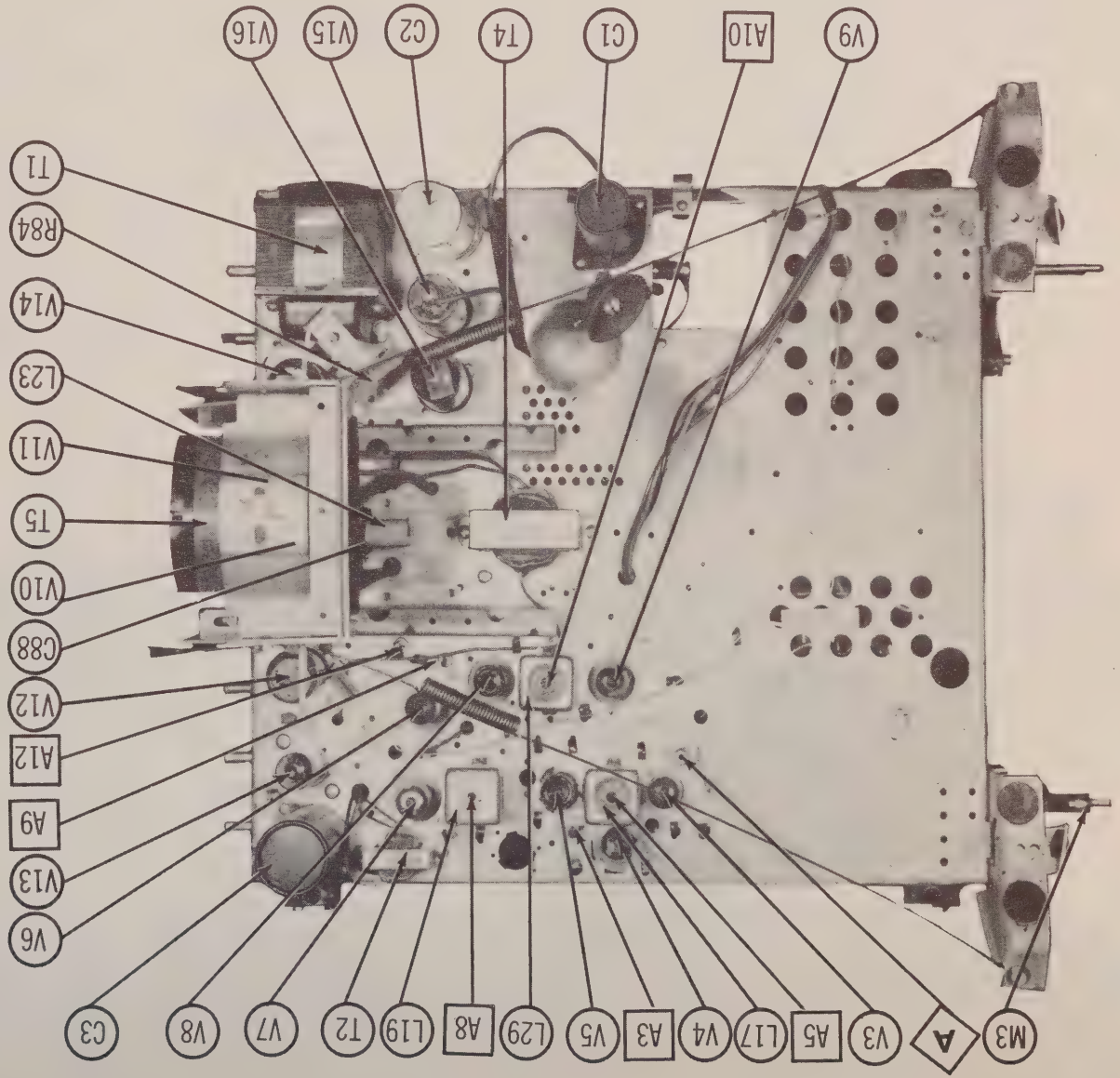
CHASSIS TOP VIEW



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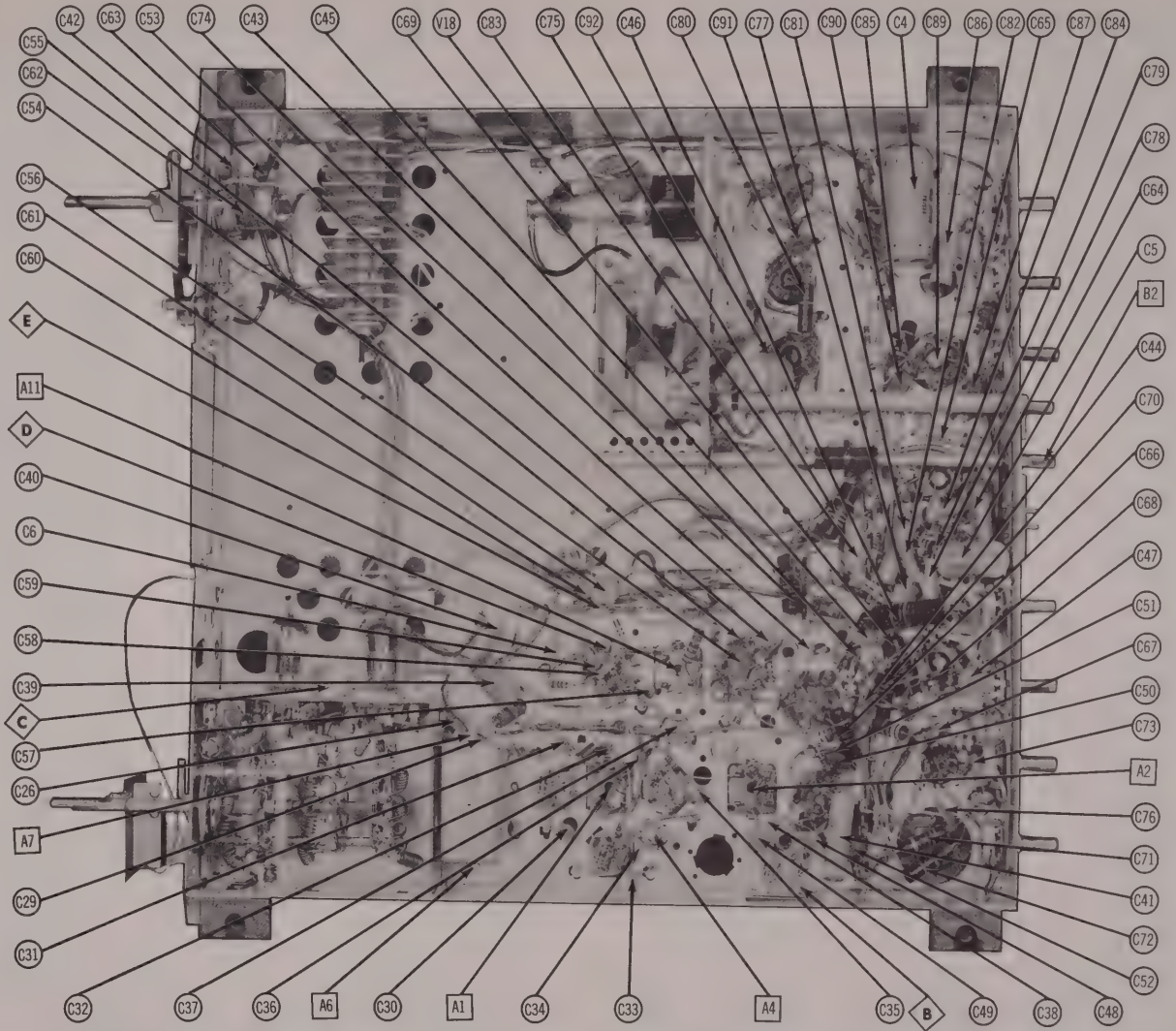
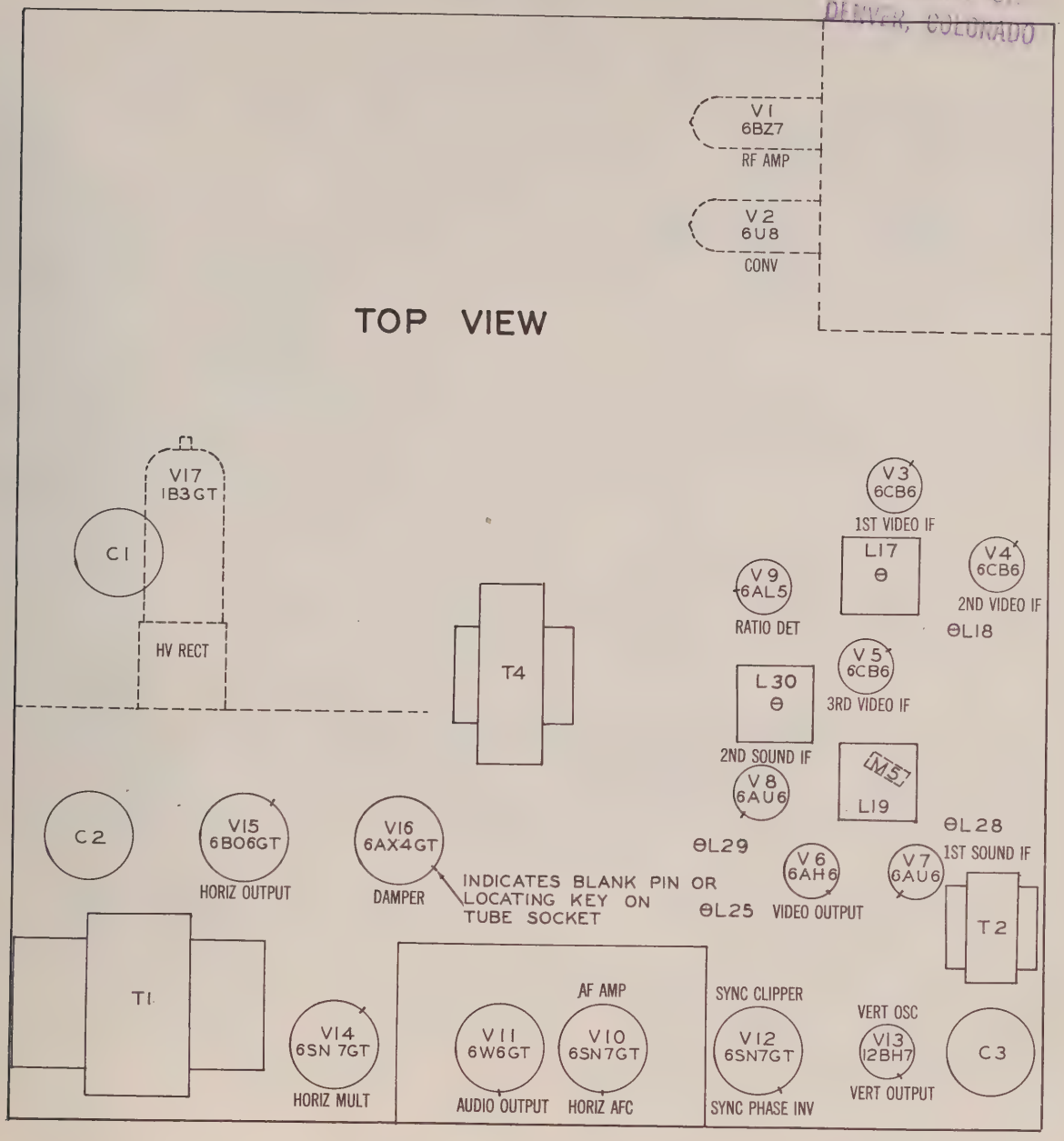


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART

DENVER, COLORADO



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-Selenium Rectifiers (M1, M2)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V11
No pic, no sound, has snow-V1, V2, V3
No pic, has sound, has raster-V6, V18
Has pic, no sound-V7, V8, V9, V10, V11

SYNC FAILURE
No vert. sync-V12, V13
No horiz. sync-V10, V12, V14
No vert. or horiz. sync-V12

SWEEP FAILURE
No raster, has sound- V14, V15, V16 , V17, V18
No vertical deflection-V13
Poor vert. linearity or foldover-V13
Poor horiz. linearity or foldover-V14, V15, V16
Narrow picture-V14, V15, V16, V17, M1, M2
Vert. off freq. -V12, V13
Horiz. off freq. - V10, V12, V14

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal output tube, V15.
The possibility of RF interference from V15 during alignment is also eliminated by this procedure.
Use an isolation transformer to protect the test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt battery through 47KΩ to pin 1 of the test receptacle on left hand side of chassis. Connect the positive lead to chassis.
Turn Area Selector switch to LOCAL.
If a distorted or unstable response curve is seen on scope during alignment it may be necessary to disable the local oscillator by shorting across the oscillator inductance (position 2 to position 13 on the band switch).
If two resonance points are found while adjusting the IF cores or traps use the one with core near the outer end of coil winding.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to point (A). Low side to chassis.	24.6MC (10MC Swp)	26.6MC	Any non-interfering channel.	Vert. amp thru 47KΩ to point (B). Low side to chassis.	A1, A2	Adjust A1 to place 26.6MC marker 50% down on high frequency side of response curve. Adjust A2 for a flat top or symmetrical response curve similar to fig. 1.
2.	"	"	"	22.8MC	"	"	A3, A2	Adjust A3 to place 22.8MC marker 50% down on low frequency side of response curve. Adjust A2 for a flat top or symmetrical response curve similar to fig. 1.
3.	"	"	"	21.9MC	"	"	A4	Adjust for MINIMUM 21.9MC marker indication on response curve.
4.	"	"	"	27.9MC	"	"	A5	Adjust for MINIMUM 27.9MC marker indication on response curve.
5.	"	High side to point (C). Low side to chassis.	"	21.9MC 23.0MC 26.4MC 27.9MC	"	"	A6, A7	Short across R19. Adjust for response similar to fig. 2.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.001MFD	High side to point (B). Low side to chassis.	4.5MC (Unmod.)	Any non-interfering channel	DC probe to point (D). Common to chassis.	A8, A9, A10	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to point (E). Common to chassis.	All	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.001MFD	High side to point (B). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any non-interfering channel	Vert. Amp. to point (D). Low side to chassis.	A8, A9, A10	Disconnect stabilizer capacitor C6. Adjust for curve of maximum amplitude and symmetry as in fig. 3.
7.	"	"	"	"	"	Vert. Amp. to point (E). Low side to chassis.	All	Reconnect capacitor C6. Adjust so that 4.5MC occurs at center of crossover lines as in fig. 4. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

Set contrast control at maximum contrast.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.001MFD	High side to point (B). Low side to chassis.	4.5MC (Unmod.)	Any non-interfering channel	DC probe thru detector (fig. 5) to pin 11 of picture tube. Common to chassis.	A12	Adjust for MINIMUM deflection.

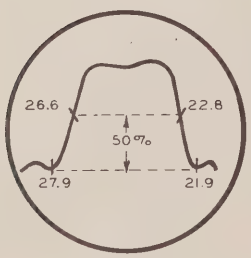


FIG.1

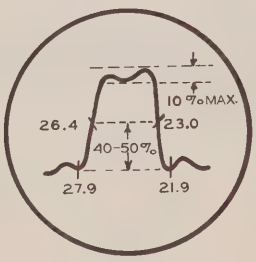


FIG.2

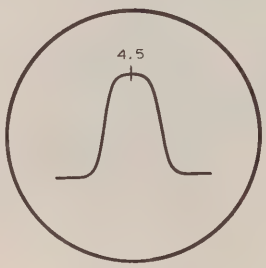


FIG. 3

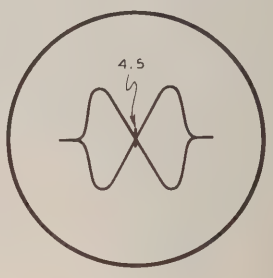


FIG. 4

ALIGNMENT INSTRUCTIONS (CONT.)

L. ... WORKMANSHIP
3824 ... ST.
DENVER, COLORADO

OSCILLATOR ALIGNMENT

Remove oscillator short, if used previously.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.
Connect a 5000 ohm, 10 watt resistor from the red B+ bus to chassis to restore voltages disturbed by removal of V15.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC (10MC Swp)	197.75MC	10	Vert. Amp. thru 47KΩ to point (B). Low side to chassis.	A13	Adjust to place the sound marker slightly higher in frequency than the 21.9MC trap dip. This is necessary to compensate for the frequency shift caused by removal of the tuner cover.
10.	"	"	213MC (10MC Swp)	215.75MC	13	"		Check all high band channels to see if the markers can be properly placed within 30 degree rotation from mid-position of the tuning control. If not, adjust L13 compressing or expanding the coil turns. If L13 is changed it may be necessary to readjust A13 on Channel 10.
			207MC (10MC Swp)	209.75MC	12			
			201MC (10MC Swp)	203.75MC	11			
			189MC (10MC Swp)	191.75MC	9			
			183MC (10MC Swp)	185.75MC	8			
			177MC (10MC Swp)	179.75MC	7			
11.	"	"	85MC (10MC Swp)	87.75MC	6	"	A14	Set the fine tuning trimmer 15 degrees off mid-capacity position (toward more capacity). Compress or expand A14 to place sound marker as in Step 9.
12.	"	"	79MC (10MC Swp)	81.75MC	5	"	A15	"
13.	"	"	69MC (10MC Swp)	71.75MC	4	"	A16	"
14.	"	"	63MC (10MC Swp)	65.75MC	3	"	A17	"
15.	"	"	57MC (10MC Swp)	59.75MC	2	"	A18	"

ANTENNA AND RF ALIGNMENT

Set area selector switch to suburban or fringe position.
The antenna coils are tuned to the video carrier side and RF coils are tuned to the sound carrier side.
Preset A20 midway in the coil.
The two impedance matching transformers, L1 and L2, must not be closer than 1/4 inch to each other or a trap action will be noted on Channel 12 or 13.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	183MC (10MC Swp)	181.25MC 185.75MC	8	Vert. amp thru 47KΩ to point (C) Low side to chassis.	A19	Adjust to place markers within limits of fig.6
17.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"	A20	" Recheck channel 8 and retouch A19 if necessary.
18.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	6	"	A21, A22	Compress or expand for response within limits of fig. 7. Tilt on low channels can be controlled by adjusting antenna matching coil, L5.
19.	"	"	79MC (10MC Swp)	77.25MC 81.75MC	5	"	A23, A24	
20.	"	"	69MC (10MC Swp)	67.25MC 71.75MC	4	"	A25, A26	"
			63MC (10MC Swp)	61.25MC 65.75MC	3	"	A27, A28	"
			57MC (10MC Swp)	55.25MC 59.75MC	2	"	A29, A30	"
21.	"	"	Not Used.	104.7MC (400∿Mod)	"	Vert. amp thru 47KΩ to pin 11 of picture tube	A29, A30	Set contrast control at maximum. Adjust fine tuning control for maximum amplitude on scope. Adjust A29 & A30 for MINIMUM 400∿ response on scope. Note generator output required to obtain 20 Volt peak to peak on scope.
22	"	"	"	57MC	"	"		Adjust fine tuning control for maximum amplitude on scope. Note generator output required to obtain 20 Volts peak to peak on scope. Output required in step 21 should be at least 6000 times that of step 22. If not, repeat step 21 and 22.

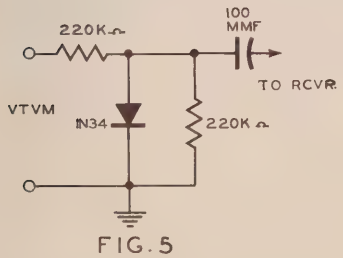


FIG. 5

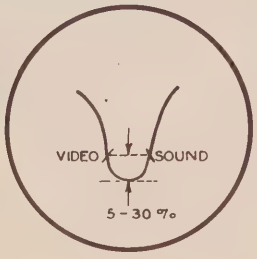


FIG. 6

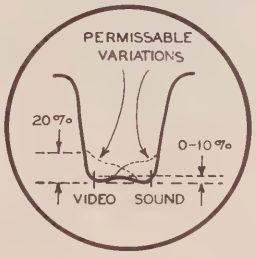


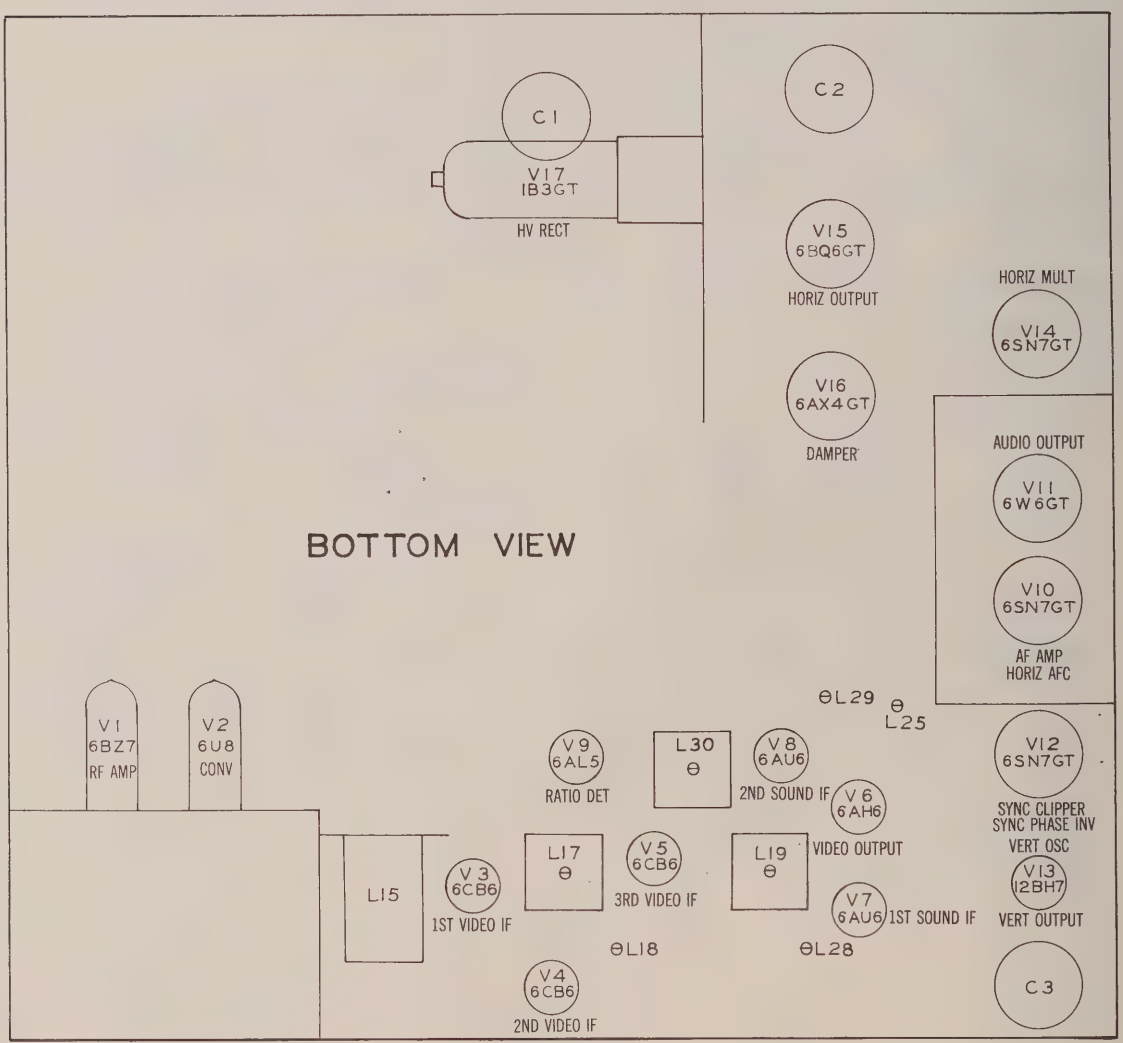
FIG. 7

MOTOROLA MODELS 21C1, B (Ch. TS-292, A, B), 21F2, B, 21F3, B (Ch. TS-292, A, B, & RADIO Ch. HS-316), 21K4, A, B, W, 21K5, B, 21K6, 21K7 (Ch. TS-292, A, B), 21T3 (Ch. TS-501A), 21T4A, EA, 21T5A, BA (Ch. TS-324, A)

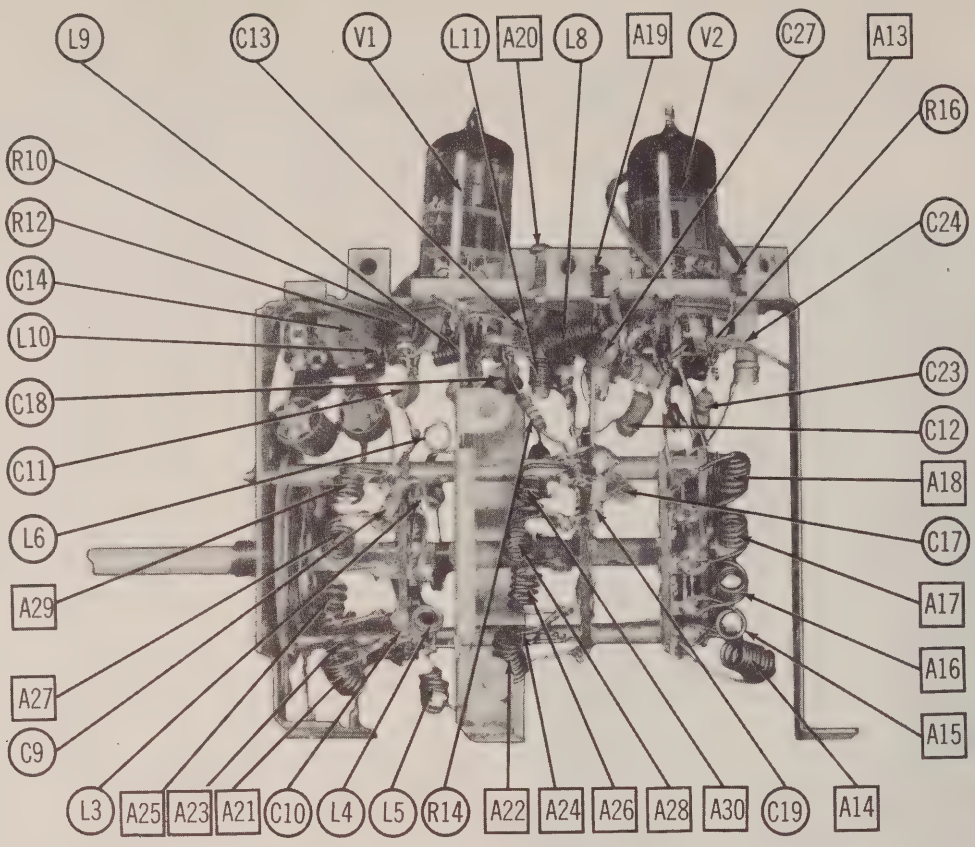
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BZ7	INF	4.2Meg	47Ω	0Ω	.1Ω	#1.6KΩ	#213KΩ	INF	0Ω
V 2	6U8	†2.2KΩ	3.8Meg	†330KΩ	.1Ω	0Ω	†220Ω	0Ω	0Ω	15KΩ
V 3	6CB6	1.5Meg	47Ω	.1Ω	0Ω	†1.5KΩ	†1.5KΩ	0Ω		
V 4	6CB6	1.5Meg	68Ω	.1Ω	0Ω	†1.5KΩ	†1.5KΩ	0Ω		
V 5	6CB6	0Ω	220Ω	0Ω	.1Ω	†1KΩ	†1KΩ	0Ω		
V 6	6AH6	1.1Meg	175Ω	.1Ω	0Ω	#4KΩ	#39KΩ	175Ω		
V 7	6AU6	0Ω	0Ω	.1Ω	0Ω	▲100Ω	▲100Ω	100Ω		
V 8	6AU6	▲100Ω	100Ω	0Ω	.1Ω	#6.8KΩ	#6.8KΩ	INF		
V 9	6AL5	INF	INF	.1Ω	0Ω	6.8KΩ	0Ω	6.8KΩ		
V 10	6SN7GT	240KΩ	#33KΩ	1.2KΩ	264KΩ	22KΩ	100KΩ	.1Ω	.47Ω	
V 11	6W6GT	270KΩ	.1Ω	#298Ω	#86Ω	#33KΩ	182KΩ	0Ω	180KΩ	
V 12	6SN7GT	†1.8Meg	#680KΩ	†0Ω	21.5KΩ	†9KΩ	2.2KΩ	0Ω	.1Ω	
V 13	12BH7	■780Ω	■2.7Meg	8.4KΩ	.1Ω	.1Ω	■2.7Meg	500KΩ	50Ω	0Ω
V 14	6SN7GT	90KΩ	#105KΩ	1.2KΩ	4.9Meg	#10.4KΩ	1.2KΩ	.1Ω	0Ω	
V 15	6BQ7GT	INF	.1Ω	#105KΩ	†0Ω	330KΩ	22KΩ	0Ω	0Ω	Top Cap ■40Ω
V 16	6AX4GT	INF	■24Ω	1 Meg	INF	#86Ω	■300KΩ	0Ω	.1Ω	
V 17	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ■320Ω
V 18	21FP4	.1Ω	1.8KΩ	Pin 6 370KΩ	Pin 10 ■15Ω	Pin 11 690KΩ	Pin 12 0Ω			

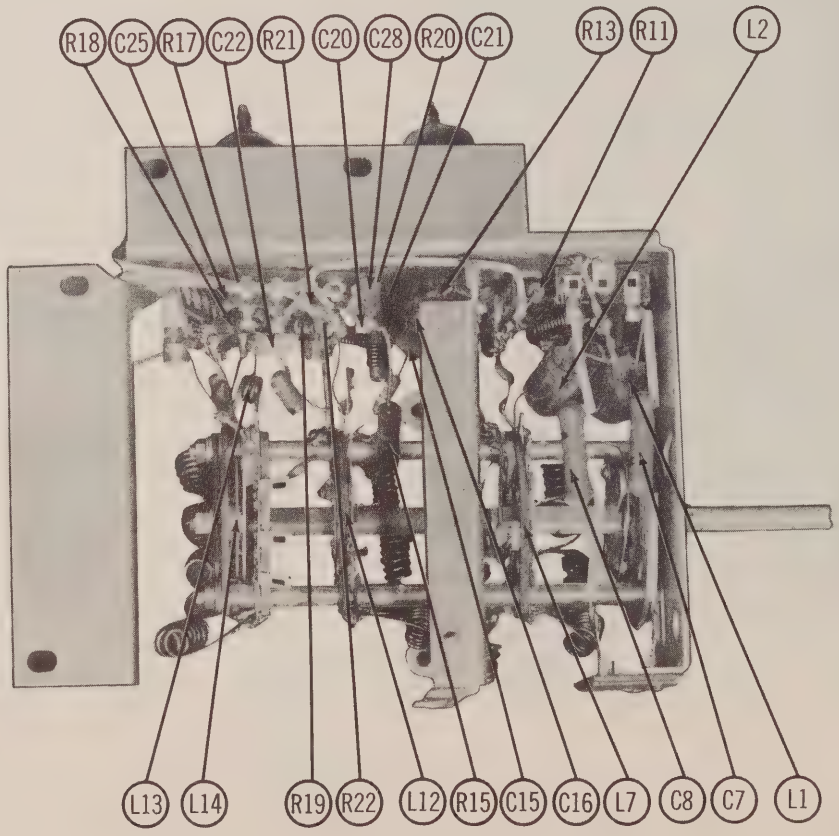
AREA SELECTOR SWITCH IN "LOCAL" POSITION
† MEASURED FROM 140V LINE
# MEASURED FROM OUTPUT OF M2
■ MEASURED FROM PIN 3 OF V16
▲ MEASURED FROM PIN 7 OF V8



TUBE PLACEMENT CHART

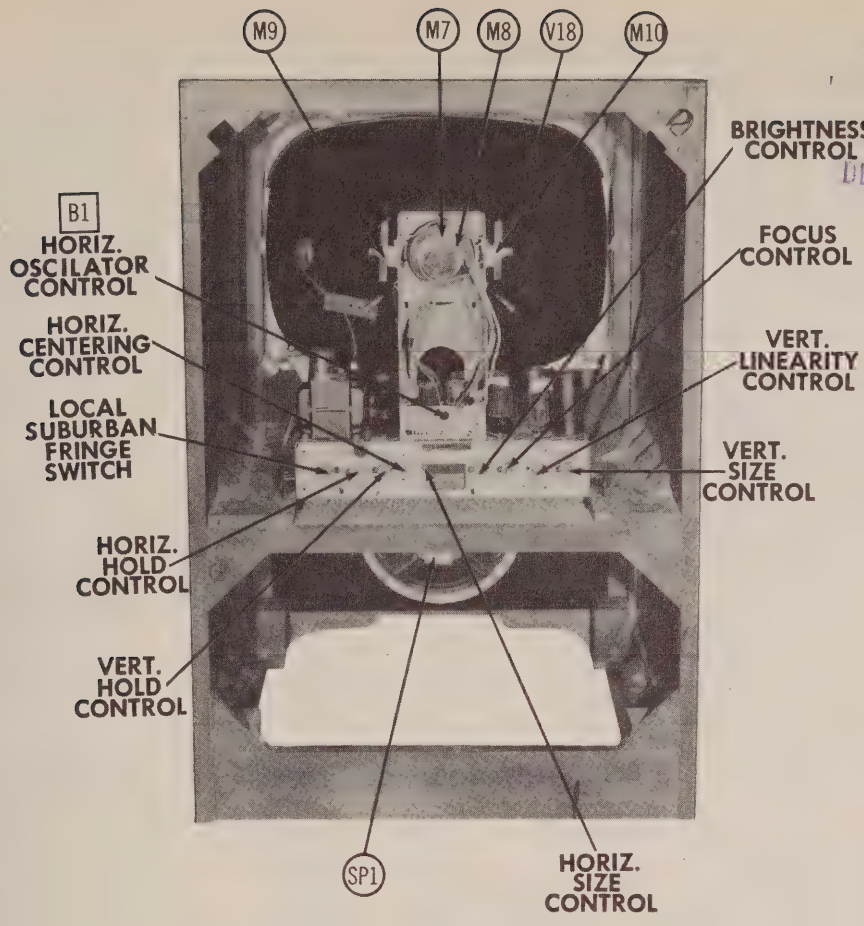


RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

OF
MILAGE ST.
DENVER, COLORADO



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and turn in a TV station, preferably a test pattern. Normally the horizontal hold control will have a sync range of approximately 70 degrees. If the control is too critical, adjust as follows:

1. Short out the horizontal oscillator coil to chassis with a .25MFD 400 Volt capacitor. This may be done by connecting the capacitor across the 2 pin socket at rear of chassis.

2. With the horizontal centering control, move the picture to the left so that the right hand edge of the raster is visible. The blanking pulse appears as a dark veritcal bar at right of raster. Adjust the horizontal hold control until approximately 1/16 inch of sync. pulse is visible as a darker bar to the right of the blanking pulse.

3. Remove the .25MFD capacitor from across the horizontal oscillator coil.

4. Adjust the horizontal oscillator slug (B1) for the same amount of sync pulse as was seen in step 2. Readjust the horizontal centering to normal.

Adjust the horizontal size (B2) for a picture slightly wider than necessary to fill the picture mask horizontally. As this control also affects the vertical size it may be necessary to adjust the vertical size control.

RASTER CORRECTOR MAGNETS

Reduce the raster size so that four corners are visable. If necessary, the position of the corrector magnets may be varied until the corners are right angles and the opposite sides of the raster are parallel.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 5 wood screws and 1 metal screw. Remove rear cover.
3. Disconnect built-in antenna. Remove 2 wood screws. Remove antenna bracket.
4. Disconnect speaker. Remove 4 speaker nuts. Remove speaker .
5. Remove 4 chassis bolts. Remove chassis.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA Part No.	STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6BZ7	6BZ7	9AJ	
V2	Converter	6U8	6U8	9-AE	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	6AH6	6AH6	7BK	
V7	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V8	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Detector	6AL5	6AL5	6BT	
V10	AF Amplifier-Horiz. AFC	6SN7GT	6SN7GT	8JD	
V11	Audio Output	6W6GT	6W6GT	7AC	
V12	Sync. Clipper - Sync. Phase Inv.	6SN7GT	6SN7GT	8JD	
V13	Vert. Oscillator-Vert. Output	12BH7	12BH7	9A	
V14	Horiz. Mult.	6SN7GT	6SN7GT	8JD	
V15	Horiz. Output	6BQ7GT	6BQ7GT	6AM	
V16	Damper	6AX4GT	6AX4GT	4CG	
V17	HV Rectifier	1B3GT	1B3GT	3C	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: MOTOROLA PART No.	SYLVANIA Part No.	RTMA BASE TYPE	NOTES
V18A	21FP4	21FP4	12C	① Circuit changes necessary
		21FP4A ①	12C	
		21EP4 ①	12D	
		21EP4A ①	12D	
B	21MP4			

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	MOTOROLA Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C1	140	150	23B484097	23A130		UPE15015		FP117		
C2A	▲140	150	23B720750	E4D575		UP1437		FP419.4	TVL-4559	
B	▲200	150						TC78		
C	30	150								
D	▲10	300								
C3A	▲200	150	23B710941	E4B357		UPE16I015		FP216.1	TVL-2444	
B	▲5	150				BR415				
C4	20	450	23X710887	PR9450/20		BR2045A		TC75	TVA-1709	
C5	10	50	23A90205	PR550/10		BR105		TC32	TVA-1304	
C6	10	50	23A90205	PR550/10		BR105		TC32	TVA-1304	
C7	330		21R115905	S1230	D6-221		GP3K-221	UC-5322	5GA-Z22	
C8	330		21R115905	S1230	D6-221		GP3K-221	UC-5322	5GA-Z22	
C9	27									
C10	1.5		21R115959	S11.5NP9	TCZ-1.5		NP9K-1R5	ZT-5515	5TCCB-V15	Note 1
C11	220		21K720975	S1220	D6-221		GP3K-221	UC-5322	5GA-Z22	
C12	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C13	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C14	150		21K410112		TCN-150				5TCU-T15	
C15	470		21R114554	S1470						
C16	470		21R114554	S1470						
C17	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C18	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C19	47		21R114153	S147N750	TCN-47		N750K-470	NT-5447	5TCU-Q47	
C20	.5-3		1V710954		S29-3			CT565A		
C21	22		21R118628	S1Z2	D6-220		GP1K-220	UC-5422	5GA-Q22	
C22	1		21R114071							
C23	18		21R115540							
C24	.5-3		1V710954		S29-3			CT565A		
C25	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C26	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C27	1000		21R400938	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C28	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C29	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C30	1000		21K400935	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C31	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C32	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C33	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C34	30		21K470329				N150K-300			
C35	1500		21A701029	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C36	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C37	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C38	4		21K38951				N90K-040			
C39	.25	50	6R9810	P288-25		PJ2P25		PT4025	27M-P25	
C40	10000			BPD-01	DD-103	TM5B1	821-01	DC-511	5BK-S1	
C41	.1	200	6R9814	P288-1	DF-104	PJ2P1		PT401	27M-P1	
C42	68		21R115897	S168	D6-680	SR5Q7	GP1K-680	UC-5466	5GA-Q68	
C43	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C44	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C45	30		21K470329				N150K-300			
C46	.1	400	6R490239	P488-1	DF-104	PTE4P1		PT401	47M-P1	
C47	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C48	2.2		21A478274		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C49	68		21K400928				N470L-680			
C50	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C51	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C52	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C53	56		21R115641		TCN-56		N750L-560			Note 2
C54	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C55	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C56	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C57	1000		21K400938	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C58	1000		21K400936	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C59	470		21K400940	S1470	D6-471	TM5T5	GP3K-471	UC-5347	5GA-T47	
C60	1000		6R490388	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C61	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C62	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C63	.003	600	6R9820	P688-003	D6-302	PTE6D3	GP2-333-302	PT623	6TM-D3	
C64	.04	600	6K400828	P688-004		PTE684		PT614	6TM-S4	Note 5

PARTS LIST AND DESCRIPTIONS

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	VOLT	MOTOROLA Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C65	.005	600	6R9869	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	Note 6
C66	.0047	600	5R490222	P688-0047	D6-472	PTE5D47	GP2-333-472	PT6247	6TM-D47	
C67	220		21R115905	S1220	D6-221	5W5T25	GP2K-221	UC-5322	5GA-T22	
C68	22	750	21R400942							
C69	.047	400	6R9861	P488-047	DF-503	PTE4S47		PT4147	47M-S47	
C70	.0047	600	5R490222	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C71	.0047	600	5R490222	P688-0047	D6-472	PTE5D47	GP2-333-472	PT6247	6TM-D47	
C72	.01	600	5R490226	P488-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C73	.005	600	6R9869	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C74	.047	400	5R490222	P488-047	DF-503	PTE4S47		PT4147	47M-S47	
C75	.047	400	5R490232	P488-047	DF-503	PTE4S47		PT4147	47M-S47	
C76	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C77	470	500	21R6673	1468-0005	D6-471	5W5T5	GP2K-471	MC245	1FM-35	
C78	470	500	21R6673	1468-0005	D6-471	5W5T5	GP2K-471	MC245	1FM-35	
C79	47	750	21R114207							
C80	.001	1000	6R9866	P688-001		PTE6D1		PT621	6TM-D1	
C81	.002	600	6R9867	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C82	470	500	21R6673	1468-0005	D6-471	5W5T5	GP2K-471	MC245	1FM-35	
C83	.01	600	6R9858	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C84	.001	600	6R9866	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C85	.0033	400	6R9868	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33	
C86	.01	600	6R9858	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C87	100		21R115900	S100N750	TCN-100		N750L-101	NT-5321	5TCU-T1	Note 3
C88	.0047	600	5R490222	P688-0047		PTE6D47		PT6247	6TM-D47	
C89	390	500	21R114740	1469-0004		5R5T4		MC8243	MS-34	
C90	680	500	21R114781	1476-0007		5R5T7			MS-37	
C91	5000		21R115312	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C92	180	3000	21K703873							
C93	500	20000	21A790833	HV20C		TV3-502	MM-C20T5	413-501	20DK-T5	Note 4
C94	.02	600	5R9871	P688-02	DF-203	PTE6S2		PT612	6TM-S2	Note 7

Note 1. Some Models use 39MMF in this application (Part #21R18896)
Note 2. Some Models use 68MMF in this application (Part #21R400938)
Note 3. Some Models use 220MMF in this application (Part #21R115905)
Note 4. Used in Ch. TS-324 and Ch. TS-501A only.
Note 5. Not used in Ch. TS-501A.
Note 6. Ch. TS-501A use .01MFD in this application (Part # 5R9858)
Note 7. Used in Ch. TS-501A only.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	MOTOROLA Part No.	IRC Part No.	CLAROSTAT Part No.	CENTRALAB Part No.	MALLORY Part No.	INSTALLATION NOTES
R1A	2500Ω	½	18R720363	QJ-380*				Contrast-Tap ⑫ 1700Ω-Panel
B	1 Meg	½						Volume & Switch Tap ⑫ 280KΩ-Rear
R2A	1 Meg	½	18A711999	QU-137	AG-61-S		U-54	Tone
B	Shaft		Not Req.	PQ	RS-2		Not Req.	Attach to R2A
R3A	100KΩ	½	18A720195	QU-128	AG-49-S	B-40	U-41	Horiz. Hold -Note 1
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A
R4A	85KΩ	½	18A720196	QU-133	AG-58-S	B-99	U-50	Vert. Hold-Note 2
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R4A
x5	75Ω	1	18K721285					Horiz. Centering-Wire Wound-Note 3
R6A	5.1Meg	½	18A702441		AG-85-S		U-65	Brightness-Note 4
B	Shaft		Not Req.		RS-2		Not Req.	Attach to R6A
R7A	1.5Meg	½	18A720289	QU-138	AG-83-S	AB-75	U-155	Focus
B	Shaft		Not Req.	Not Req.	KS-3	AK-4	Not Req.	Attach to R7A
R8A	750Ω	½	18A702475	QU-105	AG-8-S			Vert. Linearity
B	Shaft		Not Req.	Not Req.	RS-2			Attach to R8A
R9A	5 Meg	½	18A702443	QU-141	AG-85-S	AB-87	U-65	Vert. Size-Note 5
B	Shaft		Not Req.	Not Req.	RS-2	AK-4	Not Req.	Attach to R9A

* CONCENTRIKIT EQUIVALENT KIT K-4, BASE ELEMENTS & SHAFTS B27-111X & P1-224 (Panel)
B13-137X & R4-306 (Rear) & SWITCH 76-1.

Note 1. Connect a 39KΩ resistor in series with clockwise terminal & pin 1 V14. This control is used with push-on type knobs. For those receivers employing set screw type knobs this control is part part No. 18A702468.
Note 2. Connect a 330KΩ resistor in series with clockwise terminal & pground. This control is used with push-on type knobs. For those receivers employing set screw type knobs. This control is part No. 18K711278.
Note 3. Some models use alternate control)(Part No.1V721286)
Note 4. Connect a 100KΩ resistor in series with clockwise terminal & ground.
Note 5. Connect a 1 Meg resistor in series with clockwise terminal & positive side of C4.

RESISTORS

ITEM No.	RATING: OHMS	WATT	MOTOROLA Part No.	IRC Part No.	NOTES
R10	22KΩ	½	6R6397	BTS-22K	
R11	470KΩ	½	6R6032	BTS-470K	
R12	47Ω	½	6R5550		
R13	470KΩ	½	6R6377	BTS-470K	
R14	390KΩ-5%	½	6R5646	BTS-390K-5%	
R15	1500Ω	1	6R5700	BTA-1500	
R16	15KΩ	½	6R2119	BTS-15K	
R17	100Ω	½	6R6351	BTS-100	
R18	1000Ω	½	6R6301	BTS-1000	
R19	4700Ω	½	6R6039	BTS-4700	
R20	100KΩ	½	6R6075	BTS-100K	
R21	330KΩ	½	6R6014	BTS-330K	
R22	220Ω	½	6R6270	BTS-220	
R23	1000Ω	2		BTS-1000	
R24	9600Ω	½	6R6117		
R25	47Ω	½	6R5550		
R26	1500Ω	½	6R6038	BTS-1500	
R27	1000Ω	½	6R6301	BTS-1000	
R28	10KΩ	½	6R6320		
R29	68Ω	½	6R5239		
R30	1500Ω	½	6R6038	BTS-1500	
R31	8200Ω	½	6R2004	BTS-8200	
R32	220Ω	½	6R6270	BTS-220	
R33	1000Ω	½	6R6301	BTS-1000	
R34	4700Ω	½	6R6080	BTS-4700	
R35	1.5Meg	½	6R6480	BTS-1.5Meg	
R36	2.2Meg	½	6R3927	BTS-2.2Meg	
R37	1 Meg	½	6R6048	BTS-1 Meg	

ITEM No.	RATING: OHMS	WATT	MOTOROLA Part No.	IRC Part No.	NOTES
R38	39KΩ	1	6R5588	BTA-39K	
R39	3900Ω	2	6R476012	BTB-3900	
R40	10KΩ	½	6R6054	BTS-10K	
R41	100Ω	½	6R6328	BTS-100	
R42	33KΩ	½	6R6400	BTS-33K	
R43	100Ω	½	6R6326	BTS-100	
R44	6800Ω	1	6R5891	BTA-6800	
R45	120Ω	½	6R5551	BTS-120	
R46	33KΩ	½	6R6012	BTS-33K	
R47	6800Ω	½	6R6428	BTS-6800	
R48	6800Ω	½	6R6428	BTS-6800	
R49	68KΩ	½	6R6001	BTS-68K	
R50	1200Ω	½	6R6393	BTS-1200	
R51	330Ω	1	6R40102	BTA-330	
R52	470KΩ	½	6R6032	BTS-470K	
R53	100KΩ	½	6R6075	BTS-100K	
R54	270KΩ	½	6R6014	BTS-270K	
R55	1.5Meg	½	6R3966	BTS-1.5Meg	
R56	680KΩ	½	6R6475	BTS-680K	
R57	22KΩ	½	6R6028	BTS-22K	
R58	560KΩ	½	6R5897	BTS-560K	
R59	2200Ω	½	6R6069	BTS-2200	
R60	6800Ω	½	6R6428	BTS-6800	
R61	2200Ω	½	6R6069	BTS-2200	
R62	22KΩ	½	6R6028	BTS-22K	
R63	10KΩ	½	6R6054	BTS-10K	
R64	3300Ω	½	6R5581	BTS-3300	
R65	1800Ω	½	6R2089	BTS-1800	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	WATT	MOTOROLA Part No.	IRC Part No.	NOTES
R66	4700Ω	2		BTB-4700	
R67	3900Ω	2		BTB-3900	Note 3
R68	120Ω	½	6R5551	BTS-120	
R69	82KΩ	½	6R5644	BTS-82K	
R70	82KΩ	½	6R5644	BTS-82K	
R71	100KΩ	½	6R6031	BTS-100K	
R72	22KΩ	½	6R6397	BTS-22K	
R73	4.7Meg	½	6R2132	BTS-4.7Meg	
R74	150KΩ	1	6R410053	BTA-150K	
R75	150KΩ	1	6R410053	BTA-150K	
R76	560Ω	½	6R6117	BTS-5600	
R77	1300Ω	½	6R6393	BTS-1200	
R78	100KΩ	½	6R6031	BTS-100K	Note 3
R79	4700Ω	½	6R6080	BTS-4700	
R80	330KΩ	½	6R2096	BTS-330K	
R81	470Ω	½	6R6644	BTA-470	Note 4
R82	4700Ω	½	6R6080	BTS-4700	
R83	1.8Ω	1	24K780128		Note 1
R84	7.5Ω	½	1K1027		
R85	15Ω	1	6R2034		
R86	47Ω	2			Note 5

Note 1. RF Choke used as a resistor.
Note 2. In chassis TS-292A & TS-324A,R66 & R67 replaced by 8700Ω resistor (3 Watt) (Part. No. 17K710950)
Note 3. Some models use a 120KΩ resistor in this application.
Note 4. Not used in all models.
Note 5. Used only in chassis TS-501A.

TRANSFORMER (FILAMENT)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	MOTOROLA Part No.	STANCOR Part No.	MERIT Part No.	CHICAGO Part No.	TRIAD Part No.
T1	117VAC	6.3VAC			25B721779		P-2948	FV-6107	
	& .7A	& 2.9A							

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	SEC.	MOTOROLA Part No.	STANCOR Part No.	MERIT Part No.	CHICAGO Part No.	TRIAD Part No.	NOTES
T2	50Ω	220Ω	25K702429-K	A-8125	A-3000②	TBO-2 ②	A-97Y	Vert. Osc. Trans.
			25K702429 ①					
T3	295Ω	19Ω	24K721301-C					Horiz. Output Trans.
	tap ④	SEC. 2	24K721301 ③					
	15Ω	0Ω						
T4	765Ω		25K721027-G	A-8140 ⑤	A-3081		A-103X ⑤	Vert. Output Trans.
	Tap ⑤							
	1Ω		25K721027 ④					
T5A	40Ω		24K730622	DY-10 ⑥	MDF-30 ⑥	TY-4 ⑥	Y-30 ⑥	Horiz. Deflection Coils
B	3.5Ω							Vert. Deflection Coils

① Alternate Vert. Osc. Trans.
② Drill one new mounting hole.
③ Alternate horiz. output Trans.
④ Alternate vert. output trans.
⑤ Connect as auto trans.
⑥ Use original deflection network

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	SEC.	DC RES. PRI.	SEC.	MOTOROLA Part No.	STANCOR Part No.	MERIT Part No.	CHICAGO Part No.	TRIAD Part No.	NOTES
T6	2.1KΩ	3.2Ω	21Ω	.52Ω	25B710925D	A-3878	A-2928	RO-2	S-2X	

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V. C. IMP.	MOTOROLA Part No.	JENSEN Part No.	QUAM Part No.	NOTES
SP1	10"	68Ω	5.2Ω	50C712356		10E668	① 10" EM spkrs. used in Models 21K4, 21K5 and 21K6.
				50C712232 ①			② 10" EM spkr. used in Model 21K7
				50C712193 ②			③ 10" PM speaker with choke 25B701075 used on Model 21F3
				50K712196 ③			④ 10" PM spkr. with choke 25B701075 used on Model 21F3.
				50C701328 ④			⑤ 8" EM spkr. used on table models
				50C703099 ③			
				50C701634 ④			
				50C702057 ③			
				50C702550 ⑤			
				50K721311 ④			
				50L703081 ⑤			
				50L710042 ⑤			

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	SEC.	MOTOROLA Part No.	MERIT Part No.	NOTES
L1	Ant. Trans.	.8Ω	.8Ω	24B720936		
L2	Ant. Trans.	.8Ω	.8Ω	24B720936		
L3	Ant. Shunt Coil	0Ω		24K721337		Low Channel
L4	Ant. Shunt Coil	0Ω		24K721337		Low Channel
L5	Ant. Shunt Coil	0Ω		24K721689		Low Channel
L6	Ant. Shunt Coils	0Ω		24K721338		High Channel
L7	Ant. Coils	0Ω		24K721210		Channels 2-7
L8	Fil. Choke	0Ω		24A721274		
L9	Neutralizing Coil	0Ω		23B721256		
L10	RF Choke	0Ω		24K721257		
L11	RF Coil	0Ω		24A721294		Channel 13
L12	RF Coils	0Ω		24K721209		Channels 2-7
L13	Osc. Coil	0Ω		24K703077		Channel 13
L14	Osc. Coils	0Ω		24C721208		Channels 2-7
L15	1st. Video IF	.4Ω	.4Ω	24B720937		
L16	Fil. Choke	0Ω		24A721274		
L17	2nd. Video IF	.3Ω	.3Ω	24B720977		Includes Trap
L18	3rd. Video IF	.3Ω	.4Ω	24B721273		Includes Trap
L19	4th. Video IF	.5Ω	.55Ω	1V710997		Includes M5 and 1000MMF capacitor

PROPERTY OF

PARTS LIST AND DESCRIPTIONS (Continued)

RF-IF (COILS) CONT.

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA MERIT PART No.	NOTES
L20	Series Peaking Coil	2.8Ω		24B711413	TV-180	28 Microhenries
L21	Shunt Peaking Coil	9.5Ω		24K710140	TV-184	203 Microhenries
L22	Series Peaking Coil	2.8Ω		24B711413	TV-180	28 Microhenries
L23	Series Peaking Coil	2.6Ω		24K721272		Wound on 8.2KΩ resistor
L24	Series Peaking Coil	12Ω		24K721116		Wound on 10KΩ resistor
L25	4.5MC Trap	2.3Ω		1V792736	TV-151	
L26	Shunt Peaking Coil	9.5Ω		24K710140	TV-184	203 Microhenries
L27	Shunt Peaking Coil	15.5Ω		24K721271		Wound on 1.2KΩ resistor
L28	1st. Sound IF	1.2Ω		1V790341	TV-151	
L29	2nd. Sound IF	1.2Ω		1V790341	TV-151	
L30	Ratio Det.	2.8Ω	.4Ω CT	24B702543	TV-110	Tertiary Winding - .1Ω
L31	Horiz. Osc.	40Ω		24K701558	TV-163	
L32	Horiz. Lin.	13Ω		24A710751		Wound on .15MMF capacitor

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA MOTOROLA PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	NOTES
M1	.160A	48B700555	NH-5	6Q4	1090	6S250	
M2	160A	48B700555	NH-5	6Q4	1090	6S250	

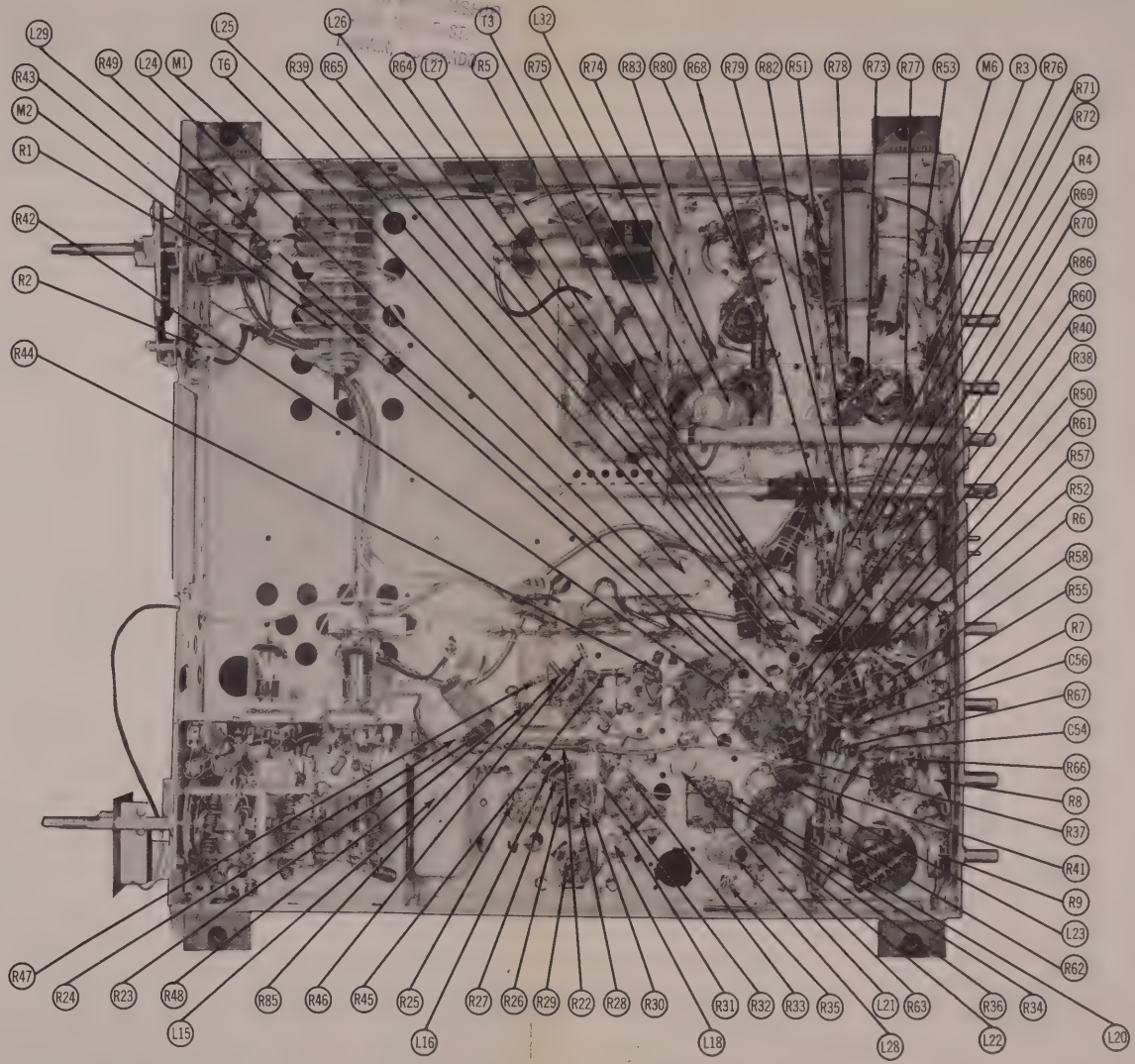
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA MOTOROLA PART No.		NOTES
M3	Bayonet	6-8	.15	Brown			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M4A	RF Tuner	1U720970	TT-44 (Complete)
B	RF Tuner	1U721334	TT-45 (Complete) Ch. TS-501A
M5A	Crystal Diode	48C711052	Video Detector
B	Crystal Diode	48K711077	Alternate
C	Crystal Diode	48K712198	Alternate
D	Crystal Diode	48K712199	Alternate
E	Crystal Diode	48K712200	Alternate
M6	Switch	40A720172	Area Selector
M7	Centering Magnet	48A721145	With Deflection Yoke Cover
M8A	Ion Trap	24K711843	
B	Ion Trap	24K711842	Alternate
M9	Correction Magnet	48B720968	Right Hand
M10	Correction Magnet	48K720969	Left Hand
	Knob	36A720197	Hold Controls (2 Used) (Push-on Type)
	Knob	36A485457	Hold Controls (2 Used) (Setscrew Type)
	Knob	36B712294	Area Selector (With Spring Insert)
	Cabinet	16E720760	Model 21C1
	Cabinet	16F720916	Model 21F2
	Cabinet	16K720917	Model 21F2B
	Cabinet	16F721068	Model 21F3
	Cabinet	16K721069	Model 21F3B
	Cabinet	16F720239	Model 21K4
	Cabinet	16K720240	Model 21K4B
	Cabinet	16K720241	Model 21K4W
	Cabinet	16F720609	Model 21K5
	Cabinet	16K720610	Model 21K5B
	Cabinet	16F720697	Model 21K6
	Cabinet	16F720942	Model 21K7
	Cabinet	16F721197	Model 21T4A
	Cabinet	16K721199	Model 21T4EA
	Cabinet	16E720744	Model 21T5A
	Cabinet	16K720745	Model 21T5BA
	Cabinet	16F711977	Model 21T3
	Knob	36B720253	Channel Selector (Includes front and rear)
	Knob	36C720252	Contrast
	Knob	36B720250	Fine Tuning and Off/On Volume (2Used)
	Knob	36K720251	Tone
	Bezel	13K720212	

PROPERTY OF



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

MOTOROLA
MODEL 42B1 (Ch. HS-306)

PROPERTY OF
L. F. BLANKENSHIP
3924 MIRAMONT ST.
DENVER, COLORADO

MOTOROLA
MODEL 42B1 (Ch. HS-306)

MOTOROLA
MODEL 42B1 (Ch. HS-306)

TRADE NAME	Motorola Model 42B1 (Ch. HS-306)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago, Ill.
TYPE SET	Battery Operated AM Superheterodyne Receiver
TUBES (Four)	Types 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3S4 Audio Output
POWER SUPPLY	1.5 Volts "A" Supply & 67.5 Volts "B" Supply
RATING	250 MA @ 1.5 Volts DC & 8.2 MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	535-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

For the most accurate alignment batteries should be installed in cabinet in a position as near normal as possible. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to loop lead from pin 6 (grid) of 1R5 (V1). Low side to chassis.	455 KC (400% Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output.
2.	"	"	1620 KC	"	"	A4	"
3.		Loop	1400 KC	Tune to 1400 KC signal	"	A5	"

Turn tuning gang fully open and set the "1" in "160" opposite index pointer on case.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

MOTOROLA
MODEL 42B1 (Ch. HS-306)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3	Det-AVC-AF Amp.	1U5	1U5	6BW	
V4	Audio Output	3S4	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	10	100	23K77635	PRS150/12		BR1015		TC42	TVA-1406	
C2	10000		21R115611	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C3	10000		21R115611	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C4	.05	200	8R13514	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C5	10000		21R115611	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C6A	100			SI100	D6-101	TM5T1	GP1K-101	UC-531		
B	2000		21K691992	BPD-002	DD-202	TM5D2	801-001	DC-522	34C3	
C	100			SI100	D6-101	TM5T1	GP1K-101	UC-531		
D	5000			BPD-005	DD-502	TM5D5	811-005	DC-525		
C7	5000			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	Note 1

Note 1. Some Models use 1500MMF in this application (Part #21A701029)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1 Meg	½	18A692018	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume-Note 1
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWB-2	Not Req.	US-27	Attach to R1A

Note 1. Add a 47KΩ resistor in series with clockwise terminal & detector transformer.

RESISTORS

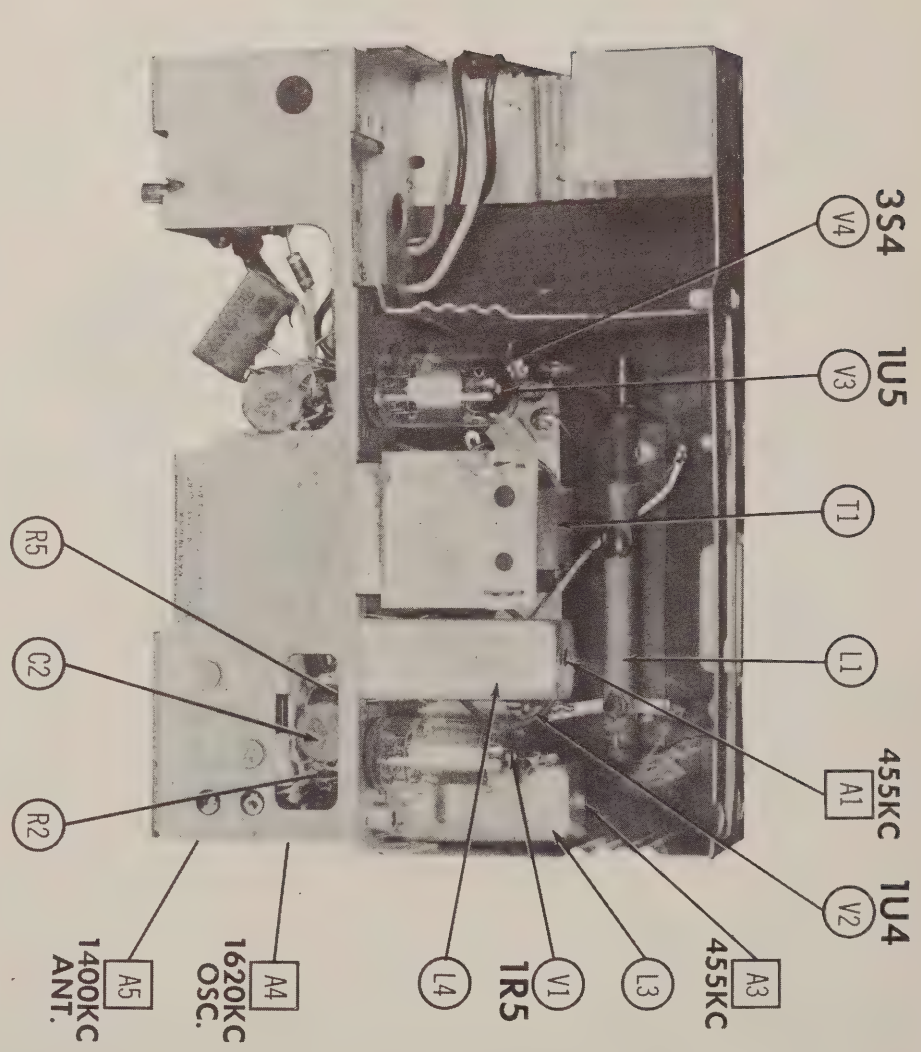
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R2	100KΩ	½	6R6031	BTS-100K	
R3	15KΩ	½	6R6477	BTS-15K	
R4	3.3Meg	½	6R2118	BTS-3.3Meg	
R5	10 Meg	½	6R2109	BTS-10 Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R6	4.7Meg	½	6R2122	BTS-4.7Meg	
R7	1 Meg	½	6R6004	BTS-1 Meg	
R8	3.3Meg	½	6R2118	BTS-3.3Meg	
R9	820Ω	½	6R6269	BTS-820	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	8.2KΩ	3.85Ω	385Ω	.45Ω	25B611377					

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	VIKING PART No.	QUAM PART No.	
SP1	3½"	PM	3Ω	50K620144 50C611579 ①	35J4	3A07	① Alternate 3½" speaker

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	MOTOROLA PART No.	MERIT PART No.	IRC PART No.	
L1	Loop Ant.	1.1Ω		24B611428			
L2	Osc. Coil	2.7Ω	11.5Ω	24B611429			
L3	Input IF	34Ω	34Ω	24K600824	BC-352		
L4	Output IF	35Ω	35Ω	24K611439	BC-353		

BATTERIES

ITEM No.	VOLTAGE	MOTOROLA PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1	1.5V "A"		950			2R			2 used in parallel
M2	67.5V."B"			457			K45		

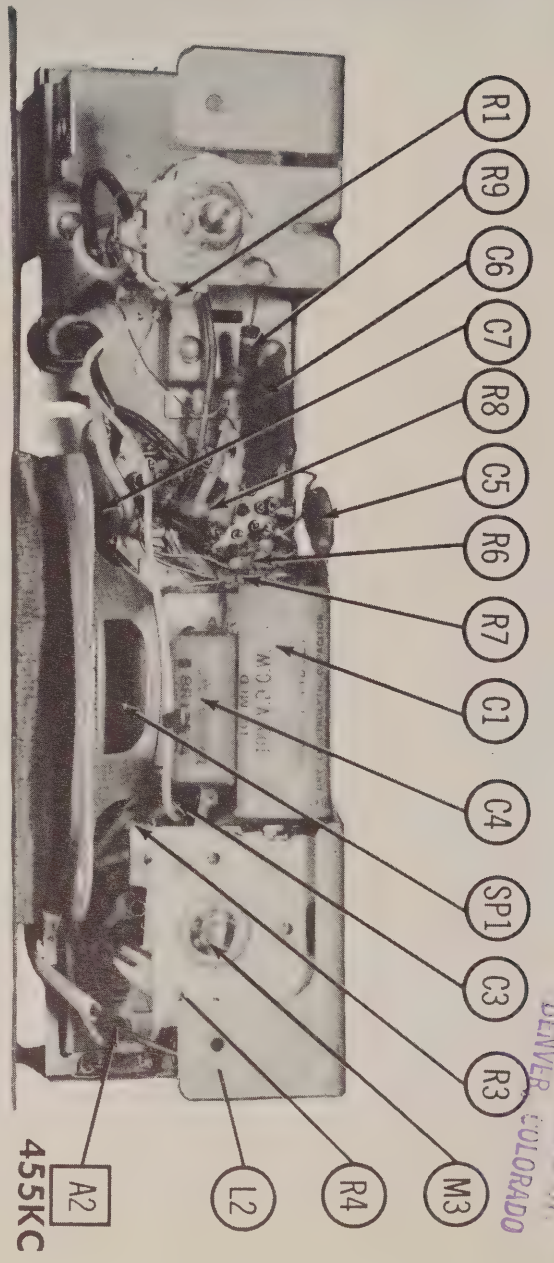
MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	Tuning Capacitor	19B611415	11-235MMF, 11-110MMF
	Knob	36C611430	Off/on Volume
	Knob	36K611431	Tuning
	Housing	1X620236	Lower, plastic with locking fastener
	Housing	15D611323	Top, less handle & studs
	Handle	55C611432	
	Studs	46A611497	For handle (2 Used)

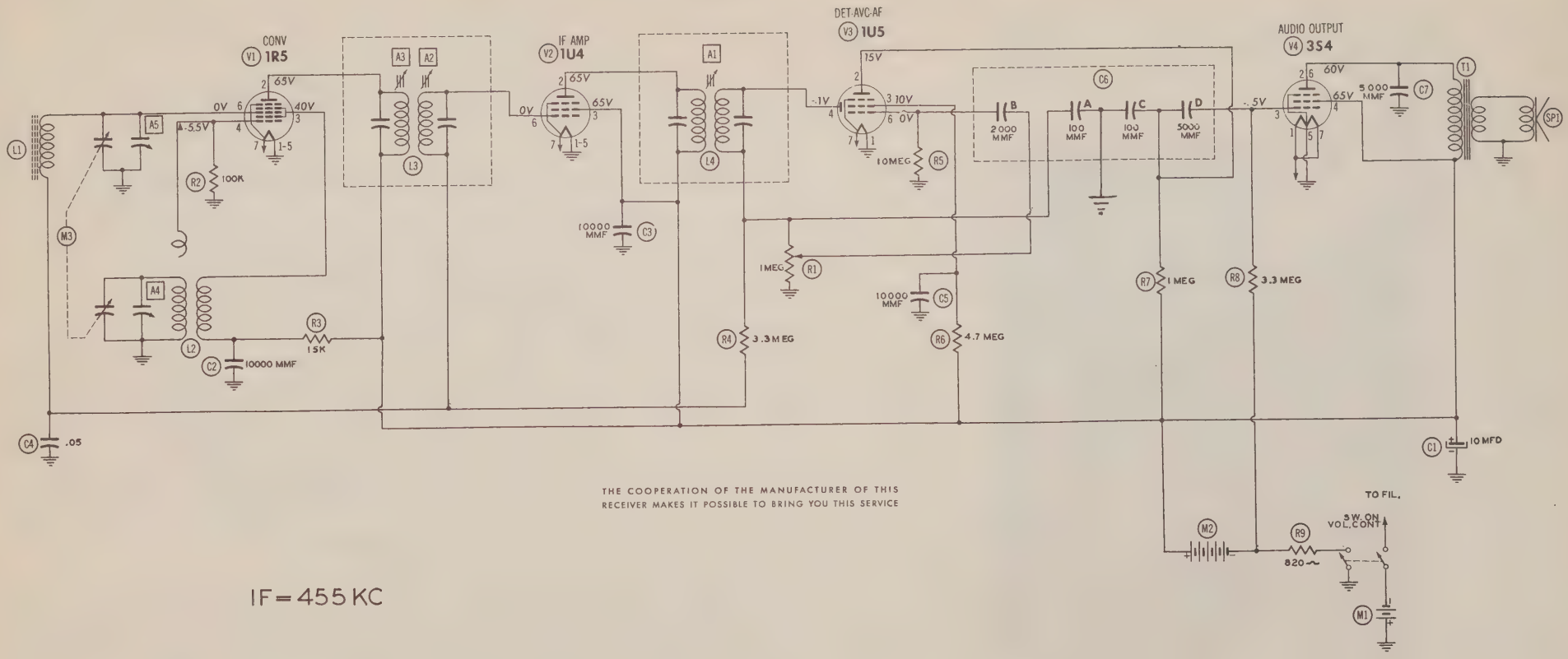
DISASSEMBLY INSTRUCTIONS

1. Remove 2 push on type control knobs from top of cabinet.
2. Remove 2 metal screws. Spread sides of carrying handle, and remove upper half of cabinet.
3. Loosen 1 screw in bottom of lower half of cabinet. Remove lower half of cabinet.

CHASSIS—BOTTOM VIEW



DENVER, COLORADO



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

IF = 455 KC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1 R5	0Ω	†34Ω	†15KΩ	100KΩ	0Ω	4.3Meg	*
V 2	1U4	0Ω	†35Ω	†0Ω	4.3Meg	0Ω	4.3Meg	*
V 3	1U5	0Ω	†1 Meg	†4.7Meg	1 Meg	820Ω	10 Meg	*
V 4	3S4	*	†385Ω	3.3Meg	2 Meg	0Ω	†385Ω	*

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 4 OF V4
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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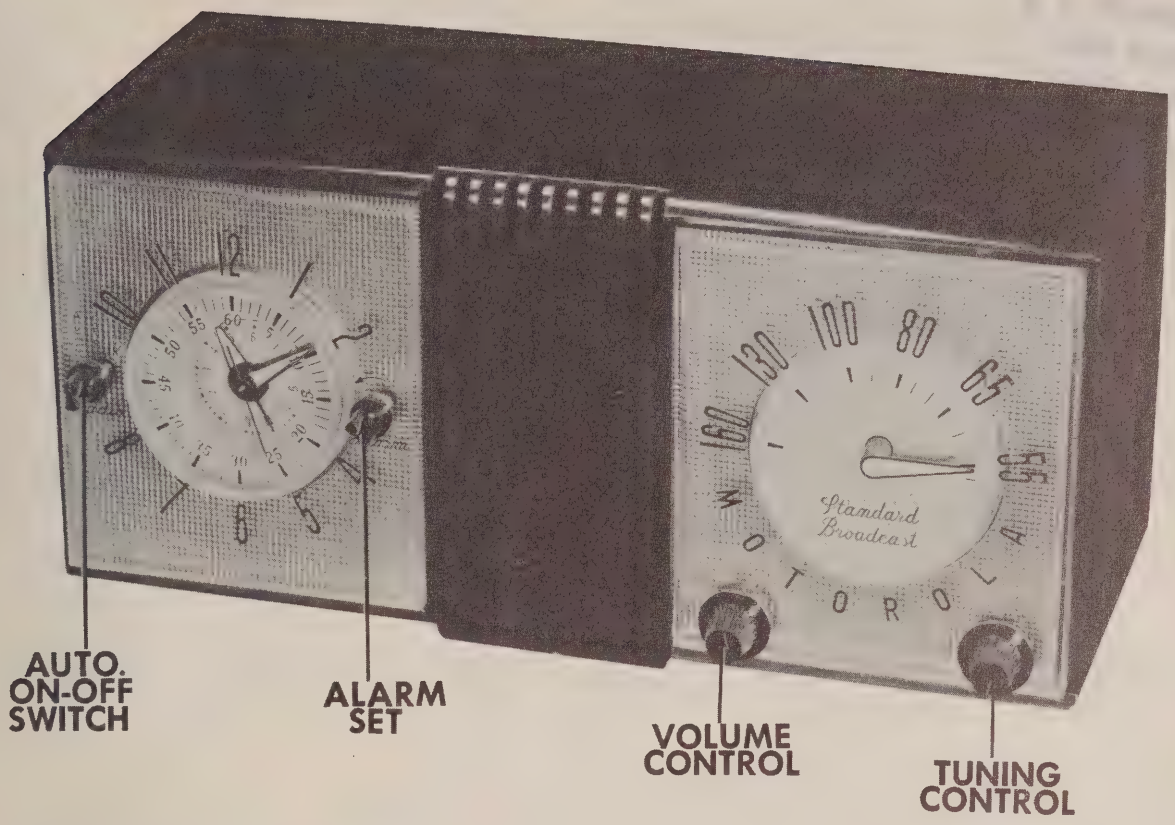
1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Nominal tolerance on component values makes possible a variation of + 15% in voltage and resistance readings.
5 - Volume control at maximum, no signal applied for voltage measurements.

MOTOROLA
MODEL 52C1 (Ch. HS-309)

MOTOROLA
MODEL 52C1 (Ch. HS-309)



MOTOROLA
MODEL 52C1 (Ch. HS-309)

TRADE NAME	Motorola Model 52C1 (Ch. HS-309)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago, Ill.
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BD6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 volts AC-60 cycle — RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to chassis.	455 KC (400∿ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1620 KC	"	"	A5	"
3.		Loop	1400 KC	Tune to 1400 KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

To set pointer turn tuning gang fully closed and set pointer in a horizontal position and pointing to the right.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BD6	12BD6	7BK	
V3	Det.-AVC-AF Amp	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	23B600855	PRS150/50-30		BRD5315A		TCD497	TVA-2450	Red
B	30	150								Green
C2	.05	200	8R9821	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3A	220			SI220	D6-221	5W5T25	GP2K-221	UC-5322		
B	2000		21B482847	BPD-002	DD-202	TM5D2	801-002	DC-522	34C3	
C	220			SI220	D6-221	5W5T25	GP2K-221	UC-5322		
D	5000			BPD-005	DD-502	TM5D5	811-005	DC-525		
C4	.022	600	8R9802	P688-022	DF-203	PTE6S22		PT6122	6TM-S22	
C5	.047	400	8R490232	489ZGXY-05		PJ4147		PT4147	4TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	18A600018	Q13-137	AG-63-Z	BSK-70	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A

RESISTORS

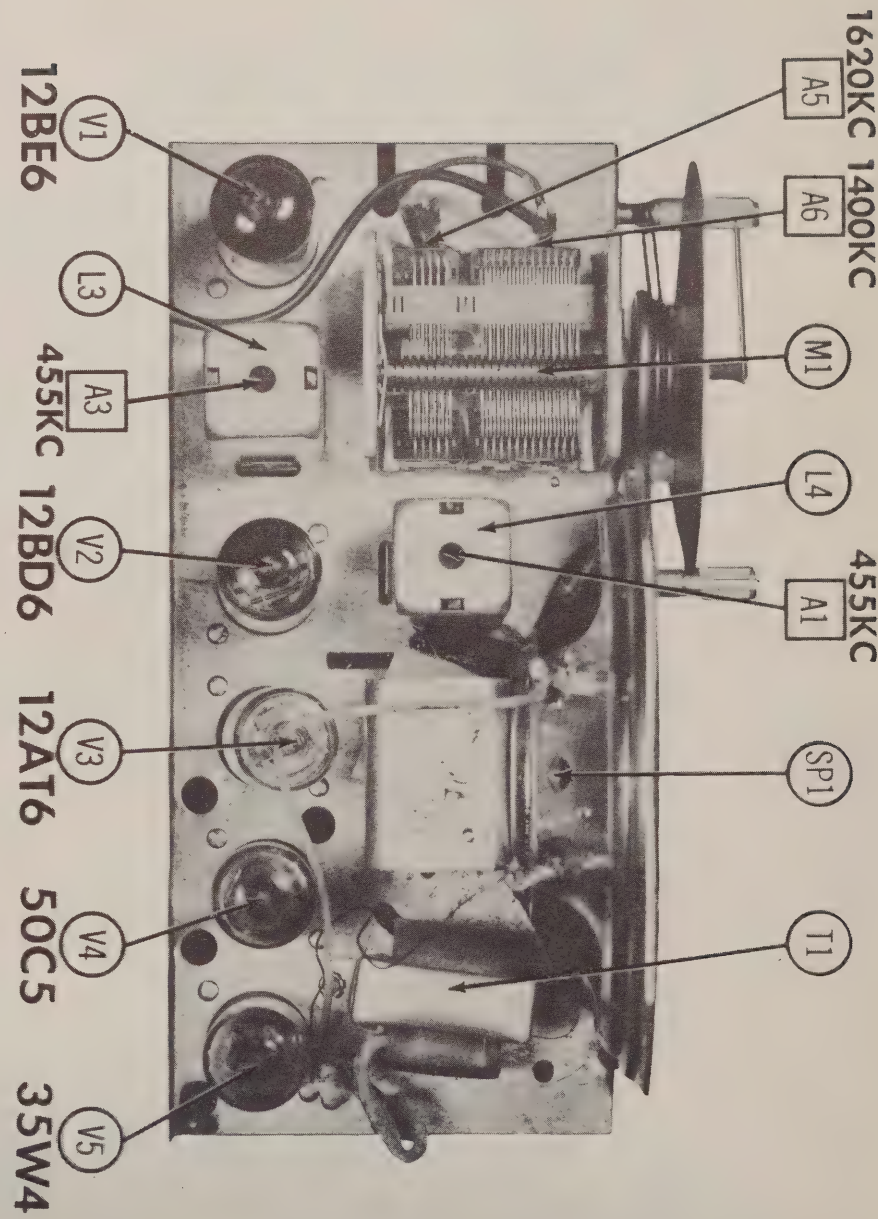
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R2	22KΩ	½	6R6028	BTS-22K	
R3	2.2Meg	½	6R3927	BTS-2.2Meg	
R4	100Ω	½	6R6018	BTS-100	
R5	10Meg	½	6R2109	BTS-10 Meg	
R6	470KΩ	½	6R6032	BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MOTOROLA PART No.	IRC PART No.	
R7	470KΩ	½	6R6032	BTS-470K	
R8	150Ω	½	6R3992	BTS-150	
R9	27Ω	1	6R5683		
R10	1000Ω	1	6R3953	BTA-1000	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2KΩ	3.3Ω	160Ω	.48Ω	25B478121	A-3332 ①	A-3025 ①	RO-2 ①	S-2X ①	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

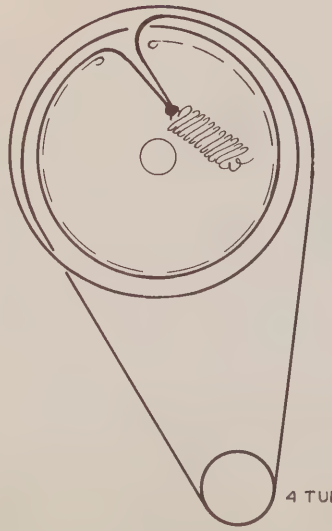
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.3Ω	50K610557 50K610558 ① 50C600017 ① 50C600857 ① 50C610506 ① 50B610052 ①	ST-113 Mod. P4-X	4A07	① Alternate 4" spkrs.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MOTOROLA PART No.	MERIT PART No.	
L1	Loop Ant.	3.3Ω		24K610788		
L2	Osc. Coil	13Ω		24A478129		Tapped @ 12Ω
L3	Input IF	17.5Ω	18Ω	24C485553	BC-352	
L4	Output IF	17.5Ω	18Ω	24C485553	BC-353	

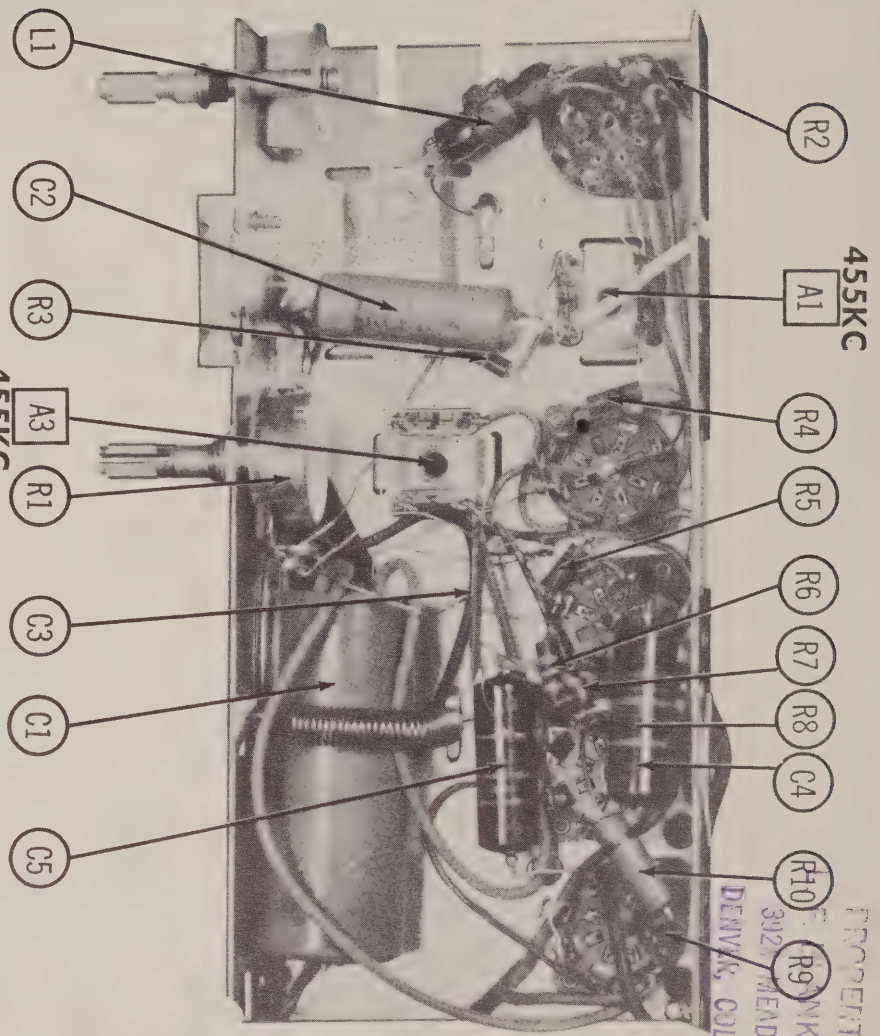
MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M1	Tuning Capacitor	19B610820	25-354MMF, 14-157MMF
	Clock Assembly	59D610825	With hands, less line cord
	Cabinet	1X610824	Walnut
	Scale	34C610791	Radio Dial
	Scale	34K610822	Clock Dial
	Knob	36B610815	Radio (2 Used)
	Knob	36B610817	Clock (2 Used)
	Knob	36K601002	Time set
	Pointer	52A610809	Radio Dial



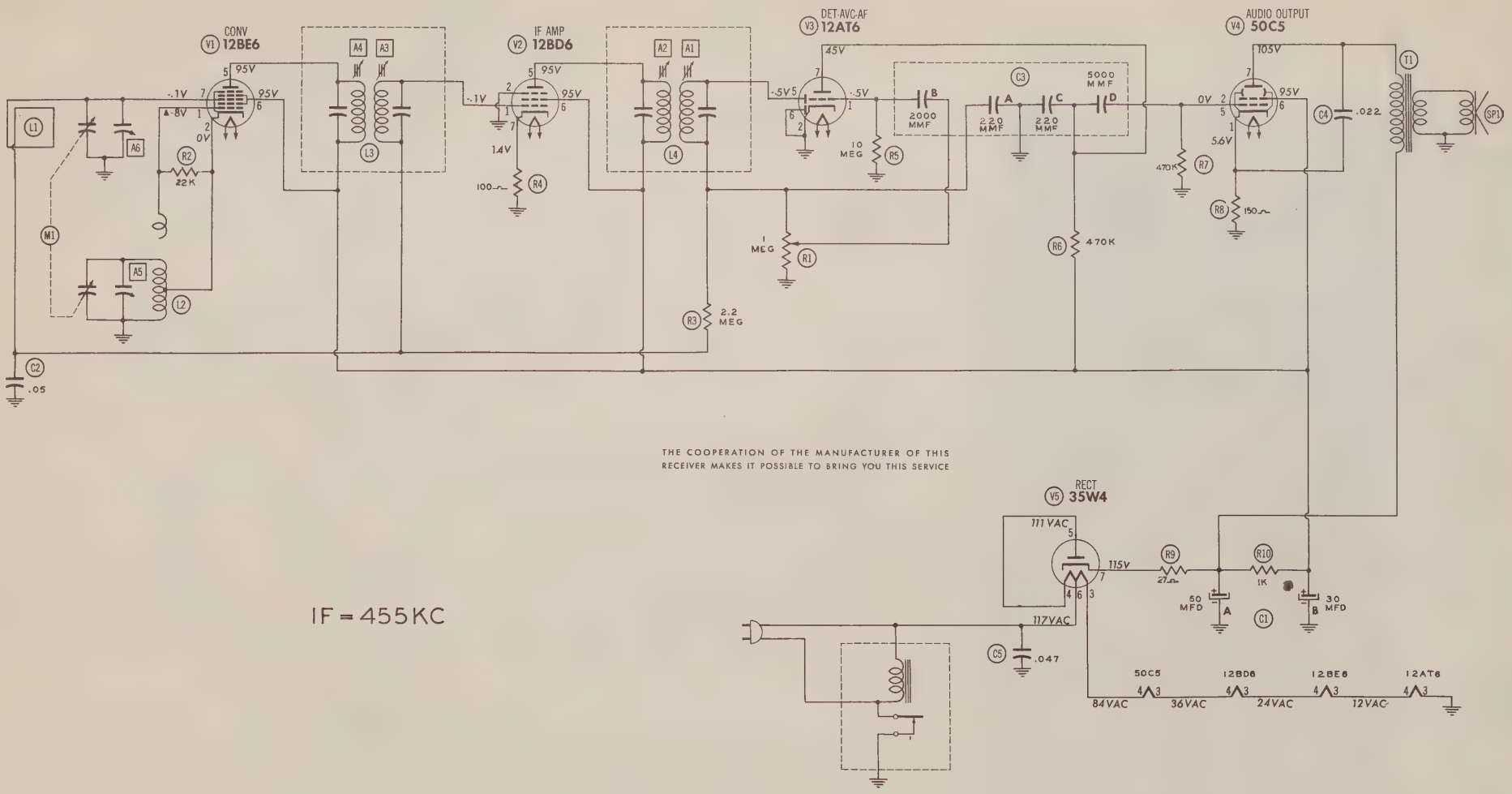
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



PROPERTY OF
302 MEADE ST.
DENVER, COLORADO

MOTOROLA
MODEL 52C1 (Ch. HS-309)



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

IF = 455KC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1Ω	12Ω	24Ω	†1KΩ	†1KΩ	3.2Meg
V 2	12BD6	3.2Meg	0Ω	24Ω	36Ω	†1KΩ	†1KΩ	100Ω
V 3	12AT6	10Meg	0Ω	0Ω	12Ω	1Meg	0Ω	†471KΩ
V 4	50C5	150Ω	470KΩ	36Ω	86Ω	470KΩ	†1KΩ	†187Ω
V 5	35W4	†27Ω	27Ω	86Ω	121Ω	121Ω	112Ω	300KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 7 OF V5.
FILAMENT RESISTANCE MEASURED WITH RADIO "OFF/ON" SWITCH IN "OFF" POSITION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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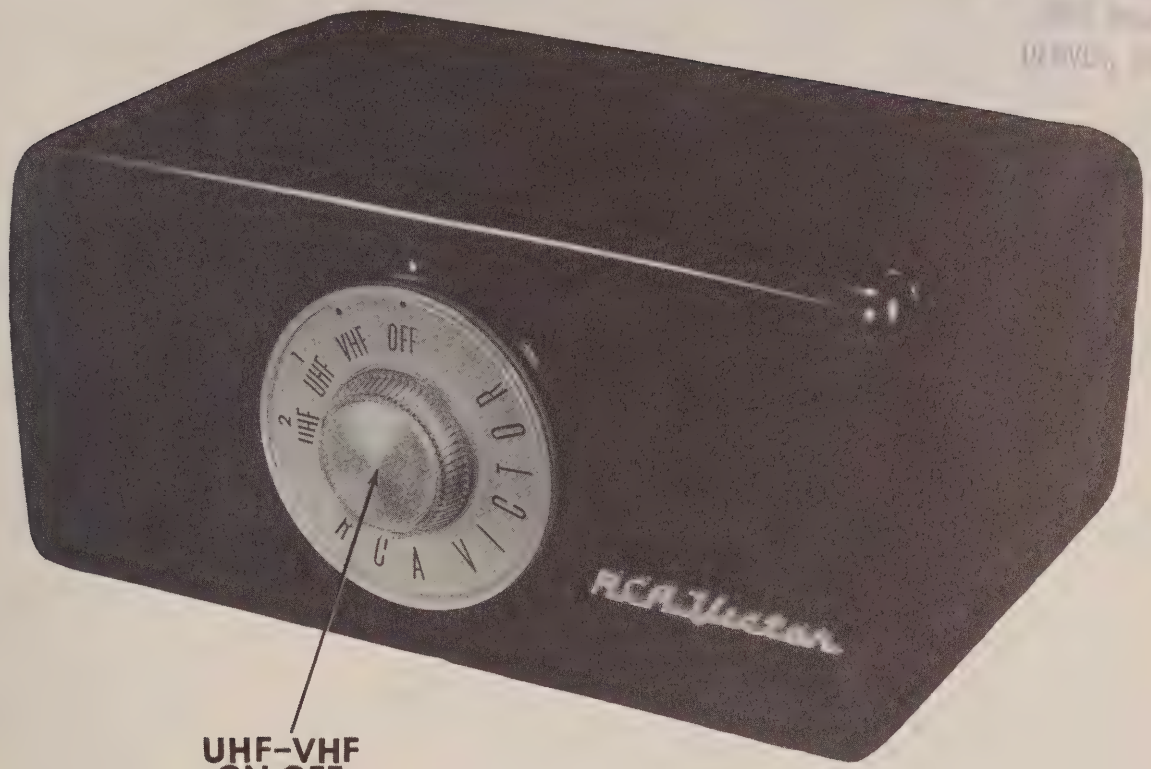
191–15

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF

RCA VICTOR
MODEL U2 (Ch. KCS79)



RCA VICTOR
MODEL U2 (Ch. KCS79)

TRADE NAME	RCA Victor Model U2 (Ch. KCS79)
MANUFACTURER	RCA Victor Div., Radio Corp., of America, Camden, N.J.
TYPE SET	AC Operated 2 Channel UHF Converter With Self Contained Power Supply
TUBES (Two)	Types 6BQ7 Osc., 6CB6 IF Amp.
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .12 Amp. @ 117 Volts AC
TUNING RANGE	Any Two UHF Television Channels

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		RCA VICTOR PART No.	STANDARD REPLACEMENT		
V1	RF Oscillator	6BQ7	6BQ7	9AJ	
V2	IF Amplifier	6CB6	6CB6	7CM	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	RCA VICTOR PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲30	200	77086	AFH4-02					R1256	
B	▲50	200								
C	■30	200								
C2	3		77277	SI3NP0	TCZ-3		NP0K-030	ZT-553		
C3	1-8		77290							
C4	1-8		77290							
C5	1-8		77290							
C6	1-8		77290							
C7	120		76347	SI120	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C8	1-8		77290							
C9	1-9		77340							
C10	2		77210				N750K-020			
C11	27		72570		TCZ-27		N750K-270			
C12	1000		77084							
C13	1-8		77290							
C14	1-9		77340							
C15	2		77210				N750K-020			
C16	27		72570		TCZ-27		N750K-270			
C17	1000		77084							
C18	470		77293	BPD-00047	D6-471		GP2K-471	UC-5347	5GA-T47	
C19	470		77293	BPD-00047	D6-471		GP2K-471	UC-5347	5GA-T47	
C20	470		77293	BPD-00047	D6-471		GP2K-471	UC-5347	5GA-T47	
C21	33		70596	SI33NP0	TCZ-33		NP0K-330	ZT-5433	5TCC-Q33	
C22	33		70596	SI33NP0	TCZ-33		NP0K-330	ZT-5433	5TCC-Q33	
C23	10		53511	SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C24	1000		77084							

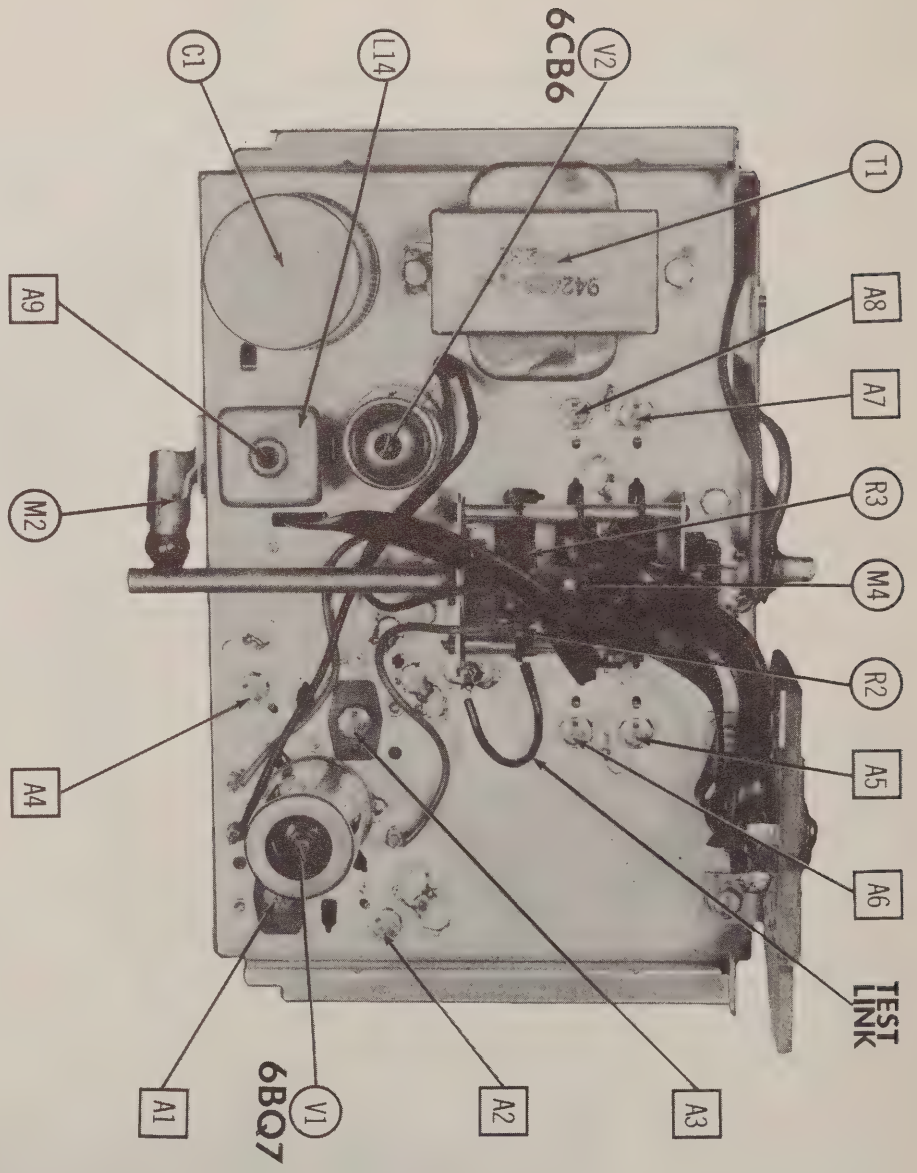
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RCA VICTOR PART No.	IRC PART No.	
R1	27Ω	1	513027		
R2	560KΩ	1/2	503456	BTS-560K	
R3	560KΩ	1/2	503456	BTS-560K	
R4	3900Ω	1/2	503239	BTS-3900	
R5	3900Ω	1/2	503239	BTS-3900	
R6	27Ω	1	513027		
R7	68Ω	1/2	503068		
R8	100KΩ	1/2	503410	BTS-100K	
R9	1000Ω	1	513210	BTA-1000	
R10	1000Ω	2	523210	BTB-1000	

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	RCA VICTOR PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @ .12A	130VAC .023ADC	6.3VAC @ .88A		77287	PS-8416			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RCA VICTOR PART No.	REPLACEMENT DATA MERIT PART No.	NOTES
L1	UHF 1 Ant. Coil Pri.	0Ω		77294		
L2	UHF 1 Ant. Coil Sec.	0Ω		77294		
L3	UHF 2 Ant. Coil Pri.	0Ω		77294		
L4	UHF 2 Ant. Coil Sec.	0Ω		77294		
L5	RF Choke	.1Ω		77153		
L6	UHF 1 Osc. Coil	0Ω		77296		
L7	UHF 1 Osc. Cathode Coil	0Ω		77297		
L8	Fil. Choke	0Ω		77298		Wound on 100Ω resistor
L9	RF Choke	.1Ω		77153		
L10	UHF 2 Osc. Coil	0Ω		77296		
L11	UHF 2 Osc. Cathode Coil	0Ω		77297		
L12	RF Choke	.1Ω		77153		
L13	Cathode Choke	0Ω		77279		
L14	UHF IF Trans.	0Ω	0Ω	77288		

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA RCA VICTOR PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	NOTES
M1	.023A	77292	NB5	8J1	1002A	6S65	

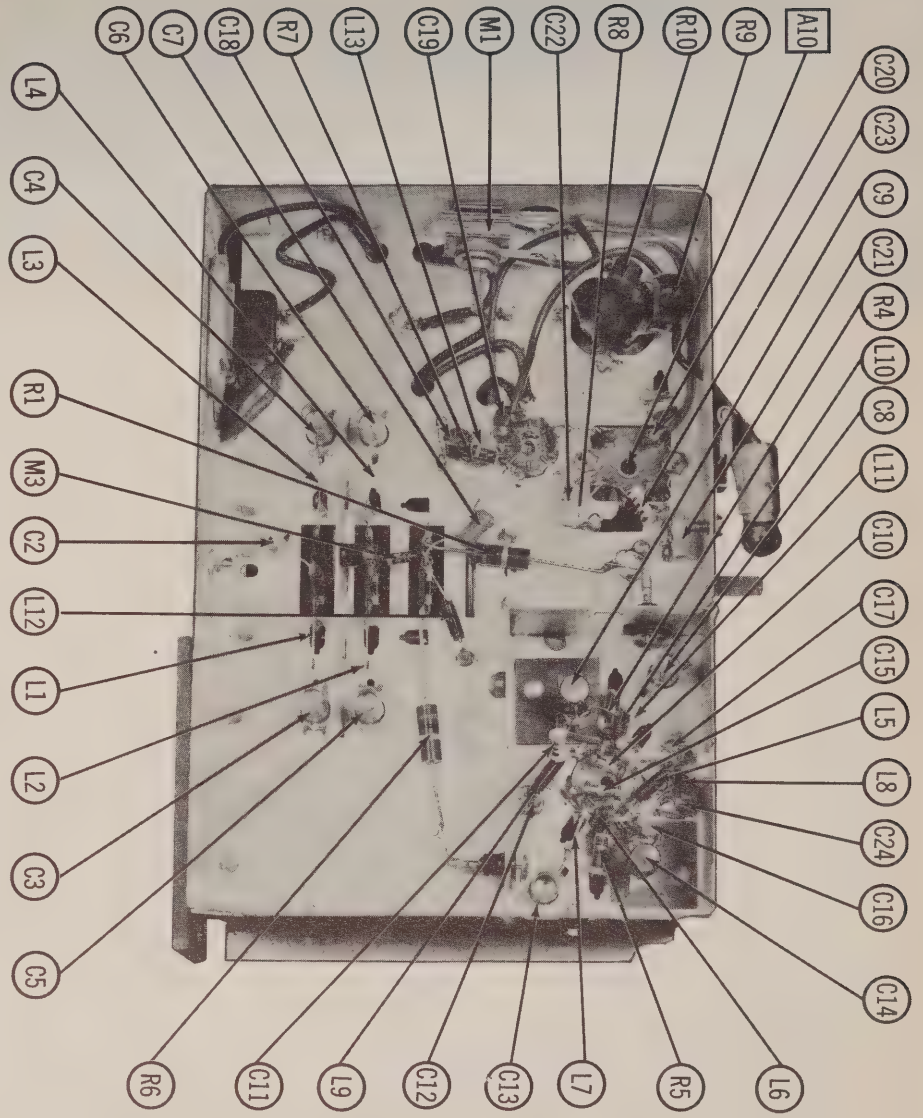
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA RCA VICTOR PART No.		NOTES
M2	Bayonet	7.5	.2	White	11765		Type #51

MISCELLANEOUS

ITEM No.	PART NAME	RCA VICTOR PART No.	NOTES
M3	Crystal	77282	Mixer - Type CK710
M4	Switch	77289	AC On/Off, UHF Channel Selector
	Cabinet Back	77300	Complete with Power Cord
	Connector	77212	Single Contact (Ant. Matching Assy.)
	Knob	77299	Selector

CHASSIS—BOTTOM VIEW



CHANNEL SELECTION ADJUSTMENTS

The TV receiver and UHF Selector must be properly connected for the particular antenna system in use, as indicated in one of the figures 1, 2 and 3.

Tune the TV receiver to either channel 5 or 6, whichever is vacant in the receiving area.

Set the UHF Selector Switch to UHF1.

Preset A1 and A2 as indicated in the table.

Temporarily connect the UHF antenna directly to the crystal M3 as follows:

Disconnect the balun matching stub from the input jack.

Connect a bias wire to the center pin of the input plug and insert the other end of the wire 1½ inches into the 1/4 inch hole directly below the input jack. Make contact with the black eyelet terminal.

Adjust A1 slightly until sound is heard, then retouch A1 and A2 for best sound and picture with minimum interference.

Remove the bias wire and reconnect the balun to the input jack.

Adjust A5 and A6 from maximum counter-clockwise position to point where best picture and sound are obtained.

Turn the UHF Selector Switch to UHF2.

Adjustment procedure is as noted above, but with the following substitutions:

Select values from the adjustment table for the other VHF Channel desired.

A3 and A4 instead of A1 and A2.

A7 and A8 instead of A5 and A6.

For proper reception the oscillator harmonic used for conversion should be lower in frequency than the UHF Station. If two slightly different positions of the oscillator core produce sound from the desired station use the most clockwise position.

If both oscillator tanks are tuned to the same frequency one will absorb energy from the other and cause poor operation. In such instances, detune the second tank while making the first oscillator circuit adjustment.

When properly aligned the crystal current should be .75MA. To measure, open the test link on top of chassis and insert an 0-5 MA meter between link and ground.

The oscillators operate in the 200MC to 300MC range and the oscillator signal to the crystal mixer is taken from a harmonic tank in the oscillator circuits. The usual practive, as listed in the table, is to employ the second harmonic for reception of channels 14 through 46 and the third harmonic for channels 47 through 83. In cases of possible interference between harmonics of the UHF oscillator and the VHF receiver oscillator, it may be possible to eliminate the interference by tuning the UHF oscillator to a different frequency and employing a different harmonic.

IF ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

If sweep generator is the type RCA WR59 or similar it may be necessary to switch the generator from Channel 5 to Channel 6 in order to view the complete response curve. Separate markers can be inserted by loosely coupling another generator to pin 2 of V1.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CONNECT SCOPE	ADJUST	REMARKS
470MMF	Through attenuator pad (fig. 4) to pin 2 (cathode) of V1, and to chassis.	82.5MC (25MC Swp)	76.5MC 88.5MC	Vert. Amp. through balanced detector (fig. 5) to tuner terminal board marked "Receiver"	A9, A10	Adjust for response as in fig. 6. If generator sweep is insufficient, switch sweep from channel 5 to channel 6 to cover entire response curve, or rock sweep center frequency for same result.

RF CHECK

Open the test link on top of chassis and insert an 0-5MA meter between link and ground. The oscillator injection trimmers are factory adjusted to produce .75MA crystal current on each channel.

If necessary, make adjustment of A11 and/or A12 for this value of current. These trimmers resemble large metal headed tacks and are mounted in feed through bushings in the walls of the oscillator compartment. Adjustment is made by sliding the heads toward or away from A2 or A4.

After adjustment, the trimmers should be soldered in place to prevent change of setting.

Measurement of crystal current should be made with no signal input and with oscillator compartment bottom shield in place.

Adjustment should not be made to compensate for a defective crystal or oscillator tube.

ADJUSTMENT TABLE

All adjustments are made in clockwise direction, starting from maximum counter clockwise position.

UHF CHANNEL	OSC. TANK A1 or A3	HARMONIC TANK A2 or A4	UHF CHANNEL	OSC. TANK A1 or A3	HARMONIC TANK A2 or A4
14-16	13.0 turns	12.5 turns	50-52	12.25 turns	4.75 turns
17-19	11.5 turns	11.5 turns	53-55	11.25 turns	4.25 turns
20-22	10.25 turns	10.25 turns	56-58	10.5 turns	4.0 turns
23-25	9.0 turns	9.5 turns	59-61	9.5 turns	3.5 turns
26-28	8.25 turns	8.5 turns	62-64	9.0 turns	3.25 turns
29-31	7.25 turns	7.75 turns	65-67	8.25 turns	3.0 turns
32-34	6.25 turns	7.0 turns	68-70	7.75 turns	2.75 turns
35-37	5.5 turns	6.5 turns	71-73	7.0 turns	2.5 turns
38-40	4.75 turns	6.25 turns	74-76	6.5 turns	2.25 turns
41-43	4.25 turns	5.75 turns	77-79	6.0 turns	2.0 turns
44-46	3.5 turns	5.25 turns	80-83	5.5 turns	1.75 turns
47-49	13.0 turns	5.0 turns			

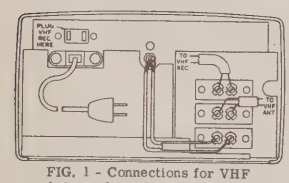


FIG. 1 - Connections for VHF Antenna for UHF Reception

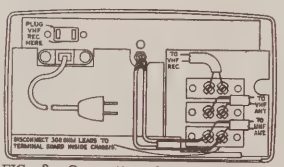


FIG. 2 - Connections for using Separate UHF Antenna with 300Ω Lead-In Wire.

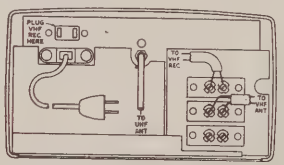


FIG. 3 - Connections for using Separate UHF Antenna With 72Ω Co-ax Lead-In.

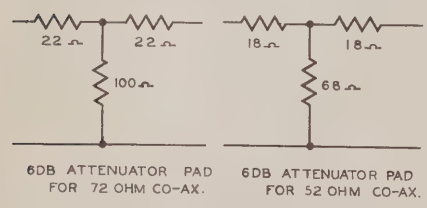


FIG. 4

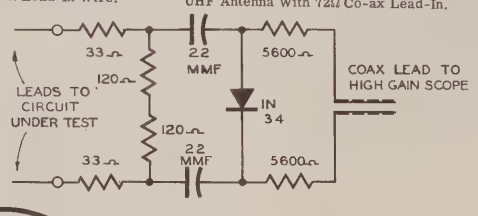


FIG. 5

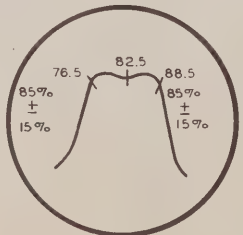
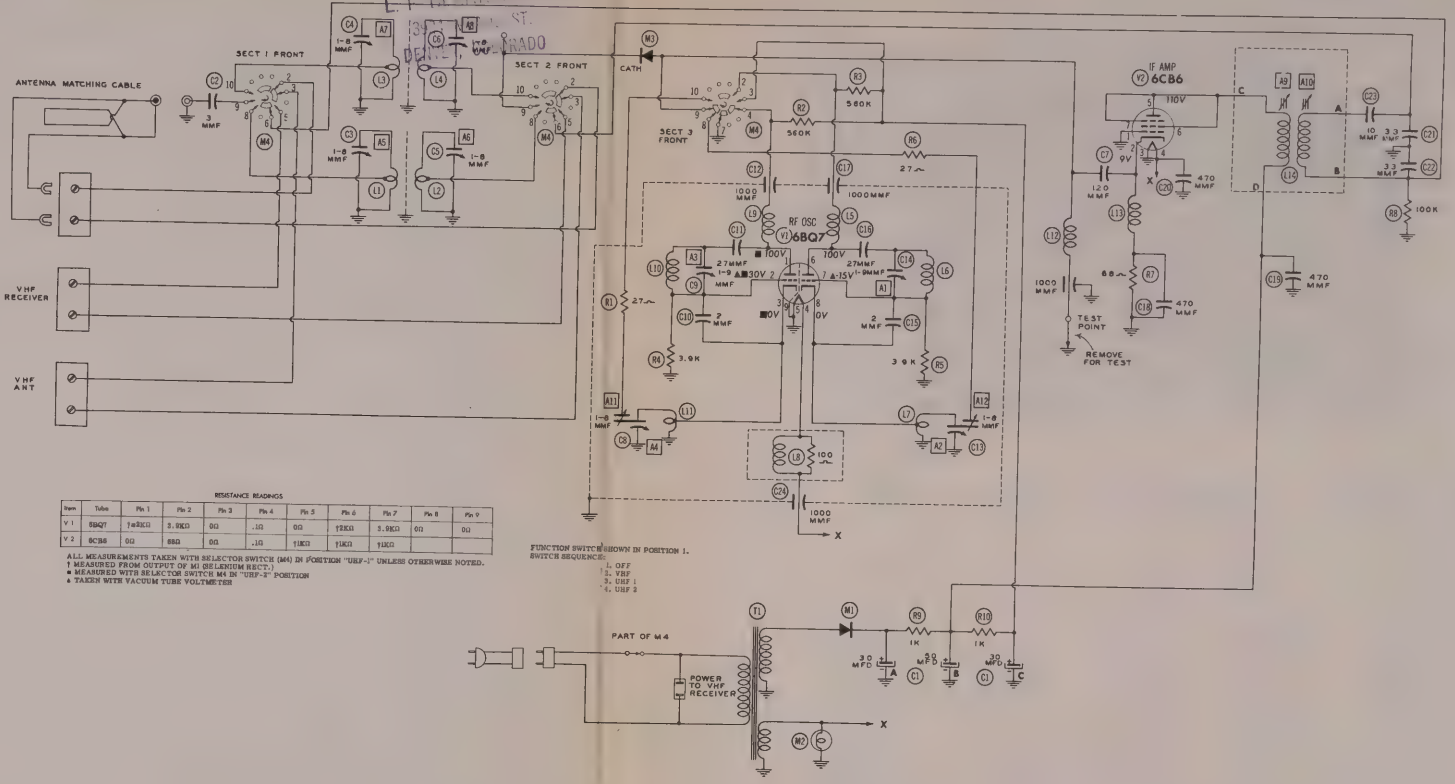


FIG.6



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	1.8KΩ	3.9KΩ	0Ω	.1Ω	0Ω	12KΩ	3.9KΩ	0Ω	0Ω
V 2	6CB6	0Ω	88Ω	0Ω	.1Ω	1KΩ	1KΩ	1KΩ		

ALL MEASUREMENTS TAKEN WITH SELECTOR SWITCH (M4) IN POSITION "UHF-1" UNLESS OTHERWISE NOTED.
† MEASURED FROM OUTPUT OF M1 (SELENIUM RECT.)
• MEASURED WITH SELECTOR SWITCH M4 IN "UHF-2" POSITION
▪ TAKEN WITH VACUUM TUBE VOLTMETER

FUNCTION SWITCH SHOWN IN POSITION 1.
SWITCH SEQUENCE:
1. OFF
2. VHF
3. UHF 1
4. UHF 2

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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MODEL 454

SENTINEL MODELS 1U-454, 1U-455, 1U-456, 1U-457, 454, 455, 456, 457

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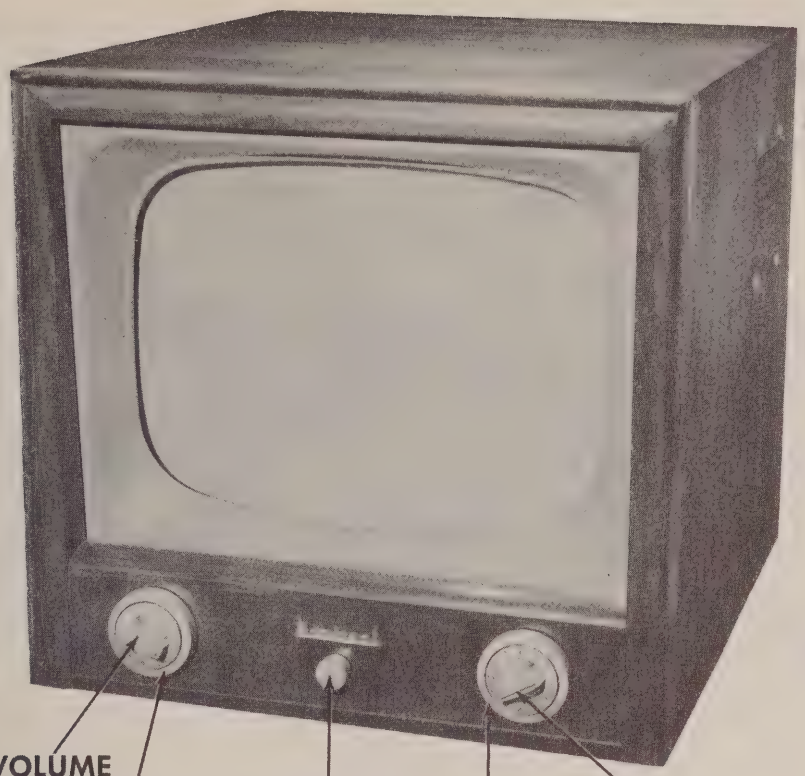

SENTINEL 454

TRADE NAME	Sentinel Models 1U-454, 1U-455, 1U-456, 1U-457, 454, 455, 456, 457.
MANUFACTURER	Sentinel Radio Corp., 2100 W. Dempster, Evanston, Ill.
TYPE SET	Television Receiver
TUBES	Eighteen
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	1.54 Amp. @ 117 Volts AC
TUNING RANGE–	Channels 2 thru 13

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SENTINEL MODELS 1U-454, 1U-455, 1U-456, 1U-457, 454, 455, 456, 457

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DATE 1–53 SET 191 FOLDER 17

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

▲ MEASURED WITH VTVM

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DOTTED IN PARTS ARE NOT USED IN ALL MODELS WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.

WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE

1. DC voltage measurements are at 20,000 ohms per volt, AC voltage measured at 1,000 ohms per volt.
2. Measured values are from socket pin to common negative unless otherwise stated.
3. Pin numbers are counted in a clockwise direction on bottom of socket.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, No signal applied.

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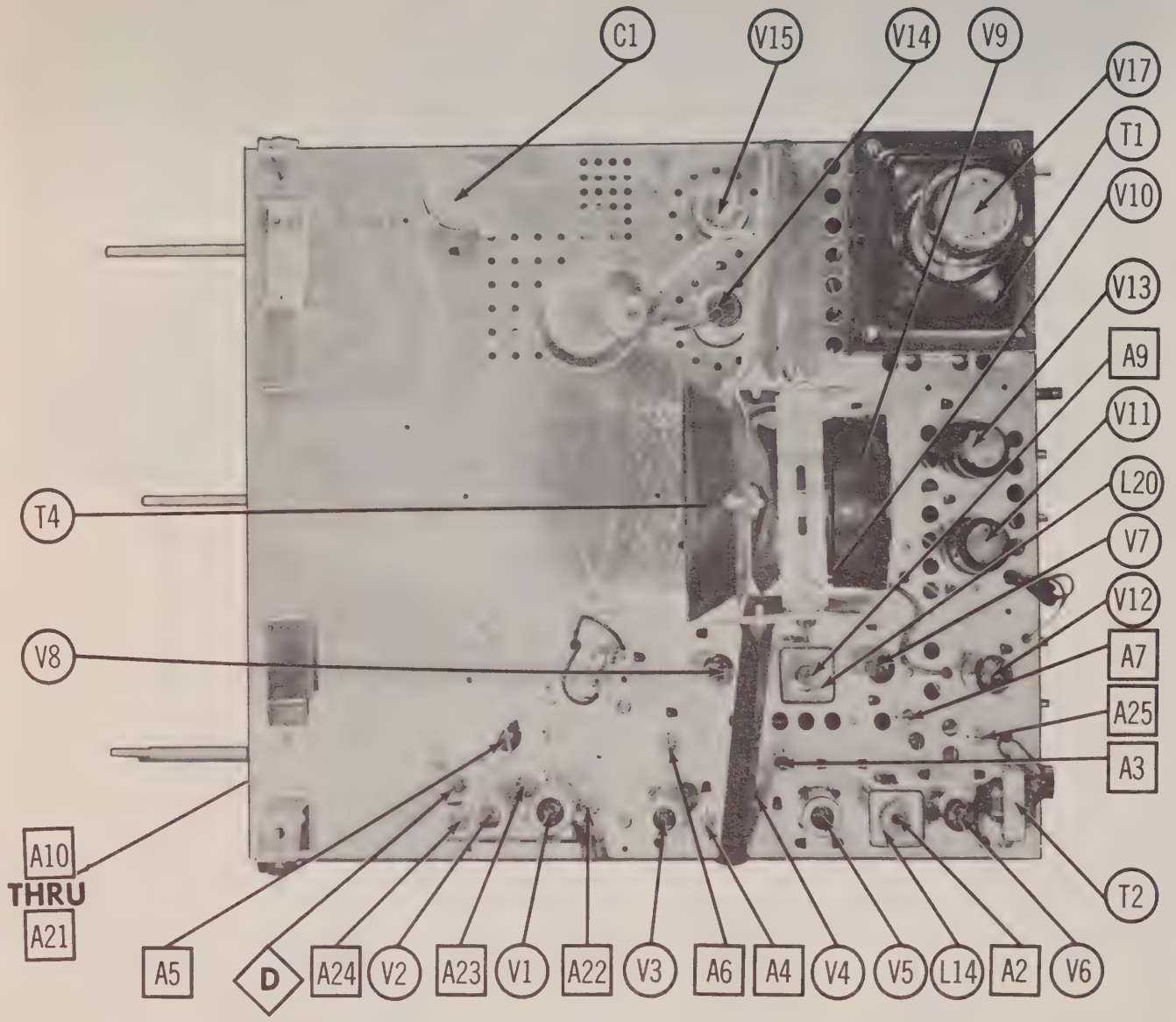
SENTINEL MODELS 1U-454, 1U-455, 1U-456, 1U-457, 454, 455, 456, 457



CHASSIS TOP VIEW

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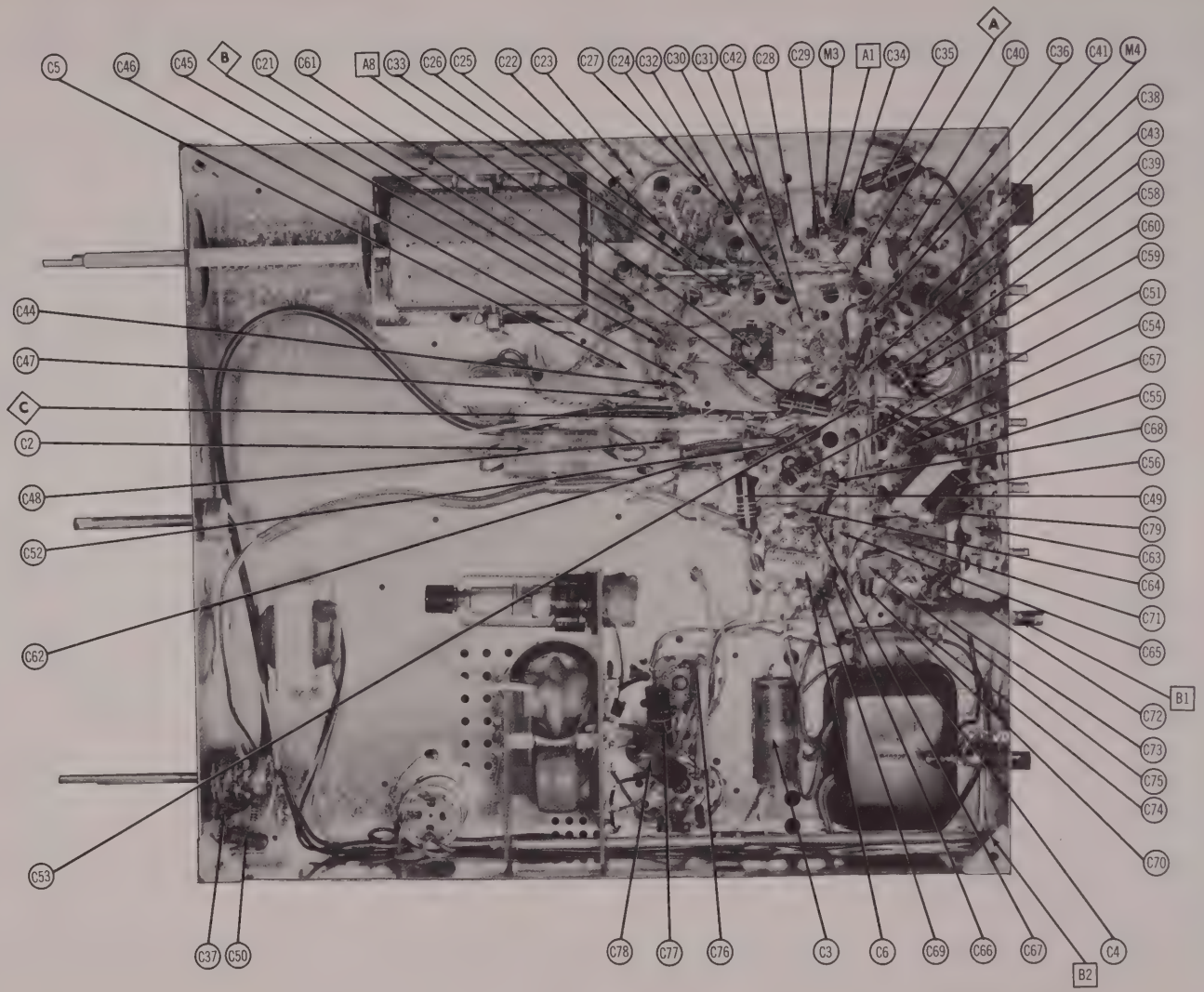
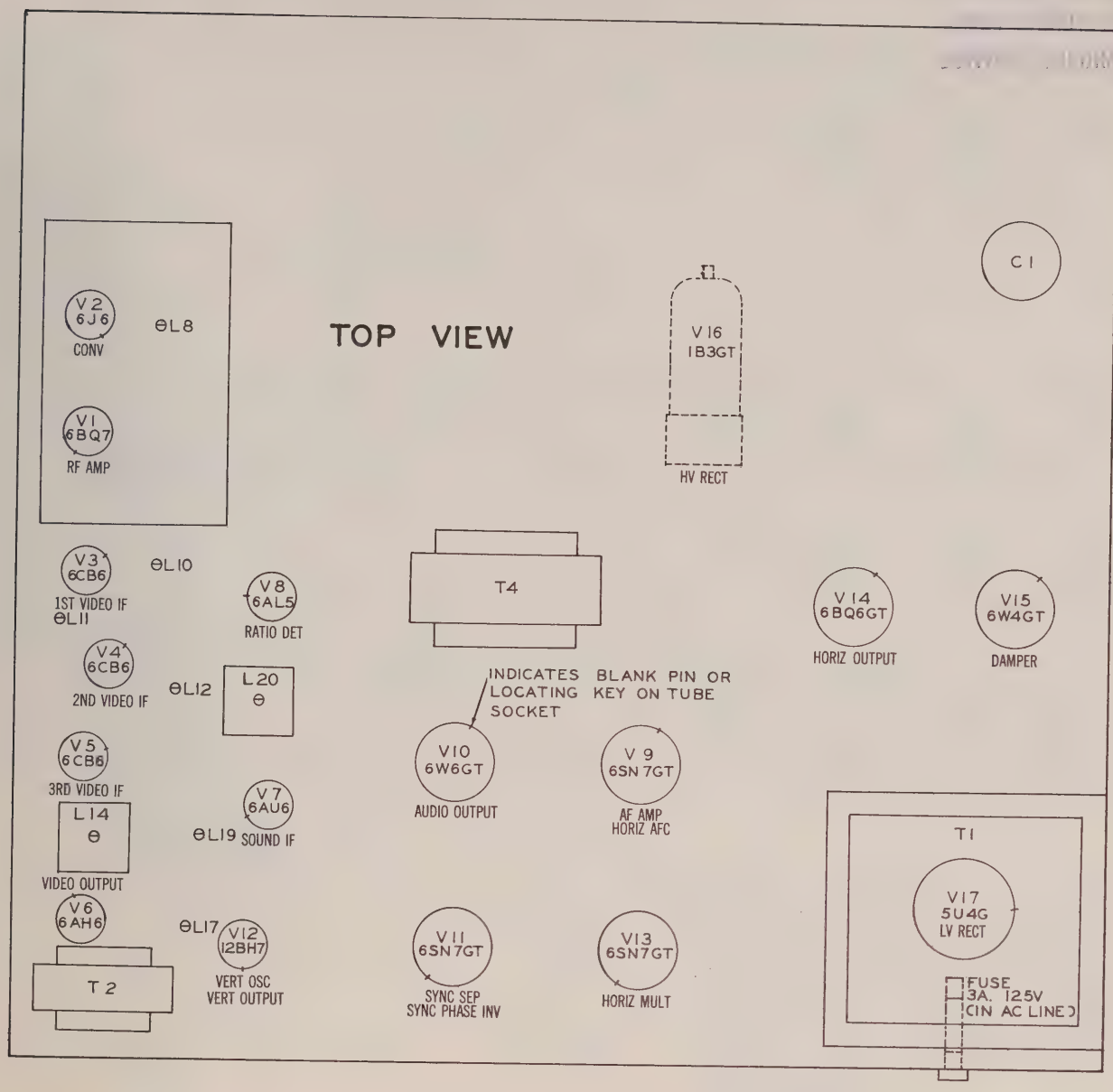


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-V17 Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V10
No pic, no sound, has snow-V1, V2, V3
No pic, has sound, has raster-V6, V18
Has pic, no sound-V7, V8, V9, V10

SYNC FAILURE
No vert. sync. -V11, V12
No horiz. sync. -V9, V11, V13
No vert. or horiz. sync. -V11

SWEEP FAILURE
No raster, has sound-V13, V14, V15, V16, V18
No vertical deflection-V12
Poor vert. linearity or foldover-V12
Poor horiz. linearity or foldover-V13, V14, V15
Narrow picture-V13, V14, V15, V16, V17
Vert. off freq. - V11, V12
Horiz. off freq. -V9, V11, V13

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multivibrator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt bias battery to ungrounded side of C33. Connect the positive lead to chassis.
Set locality switch to "strong signal" position.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	22.9MC (Unmod)	Any	DC probe to point (A). Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	21.9MC	"	"	A2	Adjust for MINIMUM deflection.
3.	"	"	24.3MC	"	"	A3	Adjust for maximum deflection.
4.	"	"	25.9MC	"	"	A4	"
5.	"	"	24.7MC	"	"	A5	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to an grounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.9MC 23.MC 26.4MC	Any	Vert. amp to point (A). Low side to chassis.	A6	Adjust A6 to place 26.4MC marker at 60% on response curve. If necessary retouch A1, A3, A4, A5 for response similar to fig. 1.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B). Common to chassis.	A7, A8	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to point (C). Common to chassis.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp to point (B). Low side to chassis.	A7, A8	Disconnect stabilizer capacitor C6. Adjust for curve of maximum amplitude and symmetry as in fig. 2.
8.	"	"	"	"	"	Vert. amp to point (C). Low side to chassis.	A9	Reconnect capacitor C6. Adjust so that 4.5MC occurs at center of crossover lines as in fig. 3. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screws are accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. to point A Low side to chassis.	A10	Adjust to place sound marker in trap notch as in fig. 4. Video marker should be at 60%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A11	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A12	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A13	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A14	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A15	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A16	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A17	
			79MC (10MC Swp)	77.75MC 81.75MC	5		A18	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A19	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A20	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A21	

ALIGNMENT INSTRUCTIONS (CONT.)

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RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp thru 10KΩ to point (D). Low side to chassis.	A22, A23, A24	Adjust for response similar to fig. 5.
11.	"	"	213 MC (10MC Swp)	211.25MC 215.75 MC	13	"		Check for response similar to fig. 5. If markers fall below 70% on any channel make slight compromise adjustments of A22, A23 and A24 with channel switch set to that channel. Recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175 .25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63 MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

4.5MC TRAP ALIGNMENT

Turn set on and tune in a TV test pattern.
Adjust A25 for maximum vertical wedge definition.

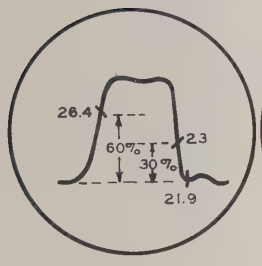


FIG.1

FIG.2

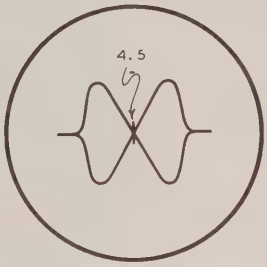


FIG.3

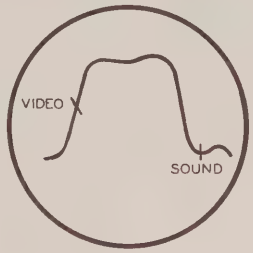


FIG.4

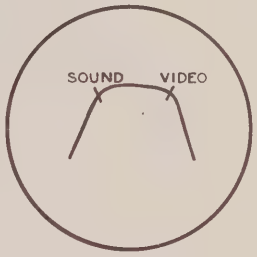


FIG.5

RESISTANCE MEASUREMENTS

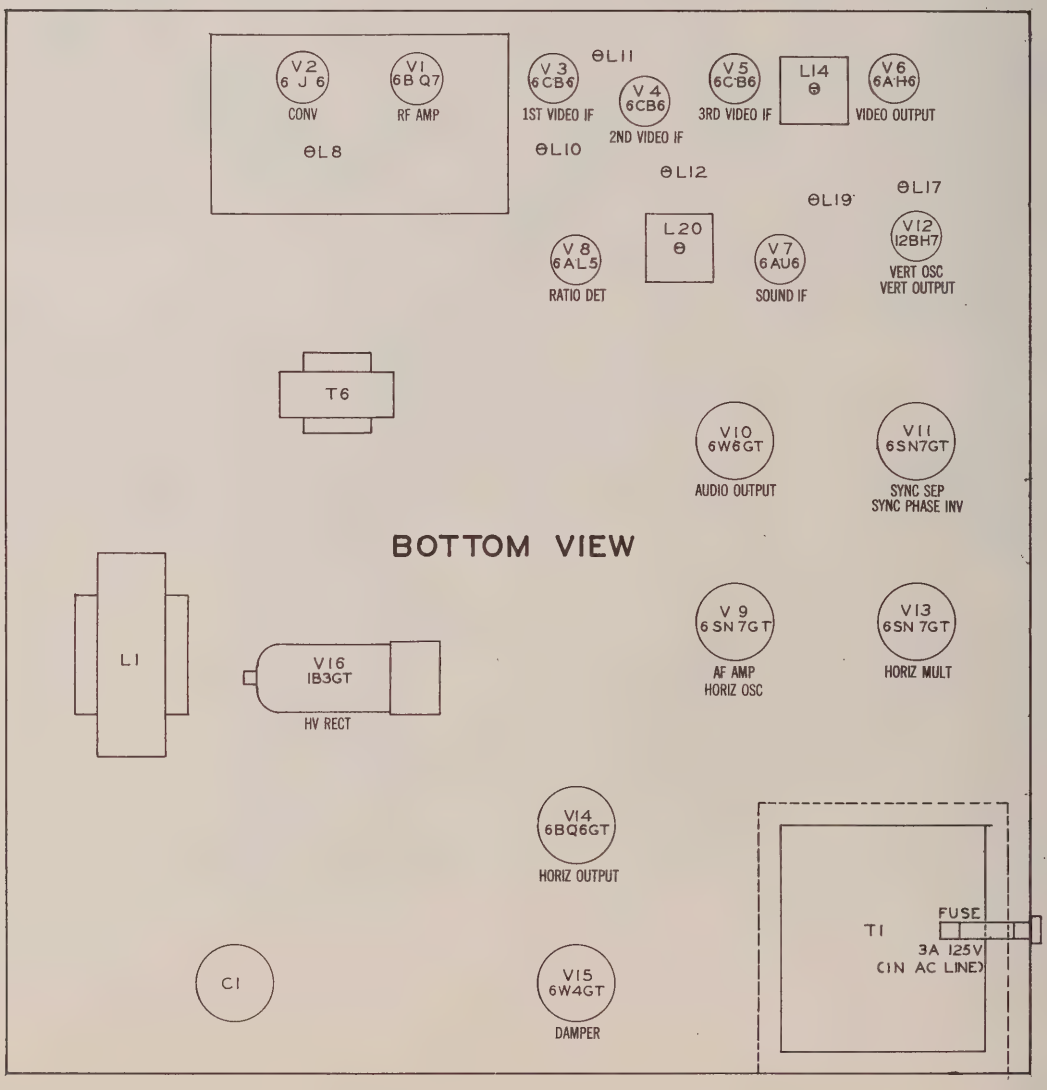
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	1.6Meg	0Ω	.1Ω	0Ω	#2.5KΩ	#180KΩ	INF	0Ω
V 2	6J6	† 11KΩ	† 1KΩ	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6CB6	1.5Meg	47Ω	0Ω	.1Ω	† 1KΩ	† 1KΩ	0Ω		
V 4	6CB6	1.5Meg	47Ω	0Ω	.1Ω	#8.2KΩ	† 1KΩ	0Ω		
V 5	6CB6	0Ω	180Ω	0Ω	.1Ω	#1KΩ	† 1KΩ	0Ω		
V 6	6AH6	1.1Meg	190Ω	.1Ω	0Ω	#4KΩ *	#33KΩ	190Ω		
V 7	6AU6	0Ω	150Ω	0Ω	.1Ω	† 10KΩ	† 10KΩ	150Ω		
V 8	6AL5	INF	INF	.1Ω	0Ω	10KΩ	0Ω	10KΩ		
V 9	6SN7GT	200KΩ	#33KΩ	1.2KΩ	265KΩ	9.6KΩ	100KΩ	0Ω	.1Ω	
V 10	6W6GT	200Ω	.1Ω	#266Ω	#66.4Ω	#33KΩ	INF	0Ω	125KΩ	
V 11	6SN7GT	† 2.2Meg	#1.2Meg	† 0Ω	22KΩ	† 10KΩ	2.2KΩ	0Ω	.1Ω	
V 12	12BH7	▪3.6Meg	500KΩ	50Ω	0Ω	0Ω	▪825Ω	▪3.6Meg	8.6KΩ	.1Ω
V 13	6SN7GT	4.9Meg	#7.9KΩ	1.2KΩ	150KΩ	#88KΩ	1.2KΩ	0Ω	.1Ω	
V 14	6BQ6GT	INF	.1Ω	INF	#15KΩ	470KΩ	#88KΩ	0Ω	0Ω	Top Cap ▪20Ω
V 15	6W4GT	INF	▪65Ω	800KΩ	INF	#66.4Ω	9.4KΩ	▪18.5Ω	▪18.5Ω	
V 16	1B3GT	PINS 1 TO 8 HAVE INF RESISTANCE								Top Cap ▪340Ω
V 17	5U4G	INF	200KΩ	INF	27Ω	INF	25Ω	INF	200KΩ	
V 18	17HP4	0Ω	1.8KΩ	Pin 6 30Ω	Pin 10 ▪25Ω	Pin 11 640KΩ	Pin 12 .1Ω			

LOCALITY SWITCH IN WEAK SIGNAL POSITION.

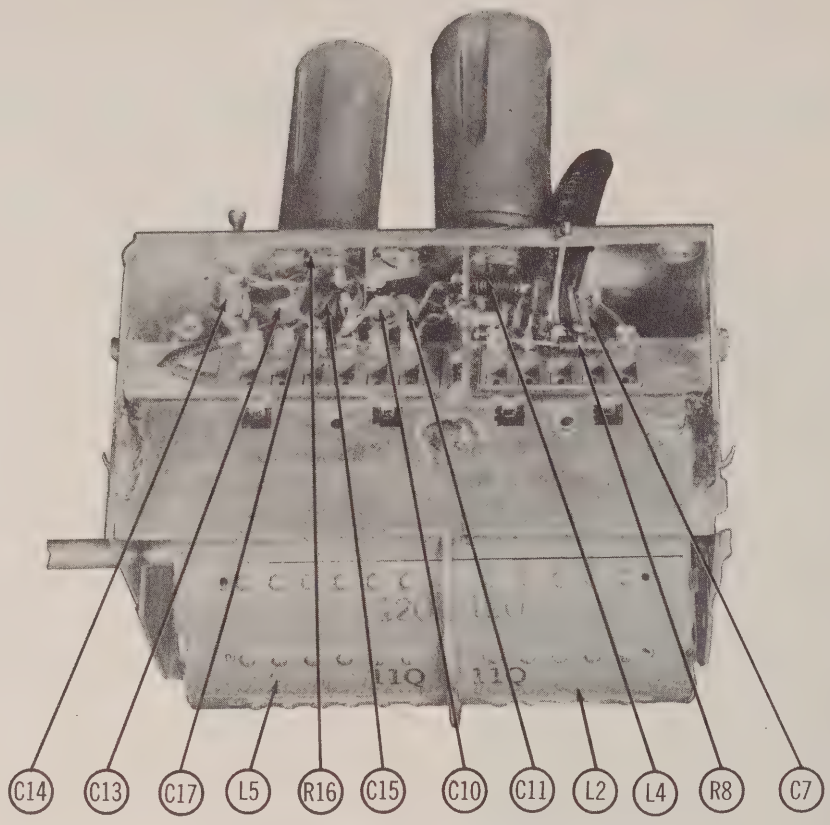
† MEASURED FROM 155V LINE

MEASURED FROM PIN 2 OF V17

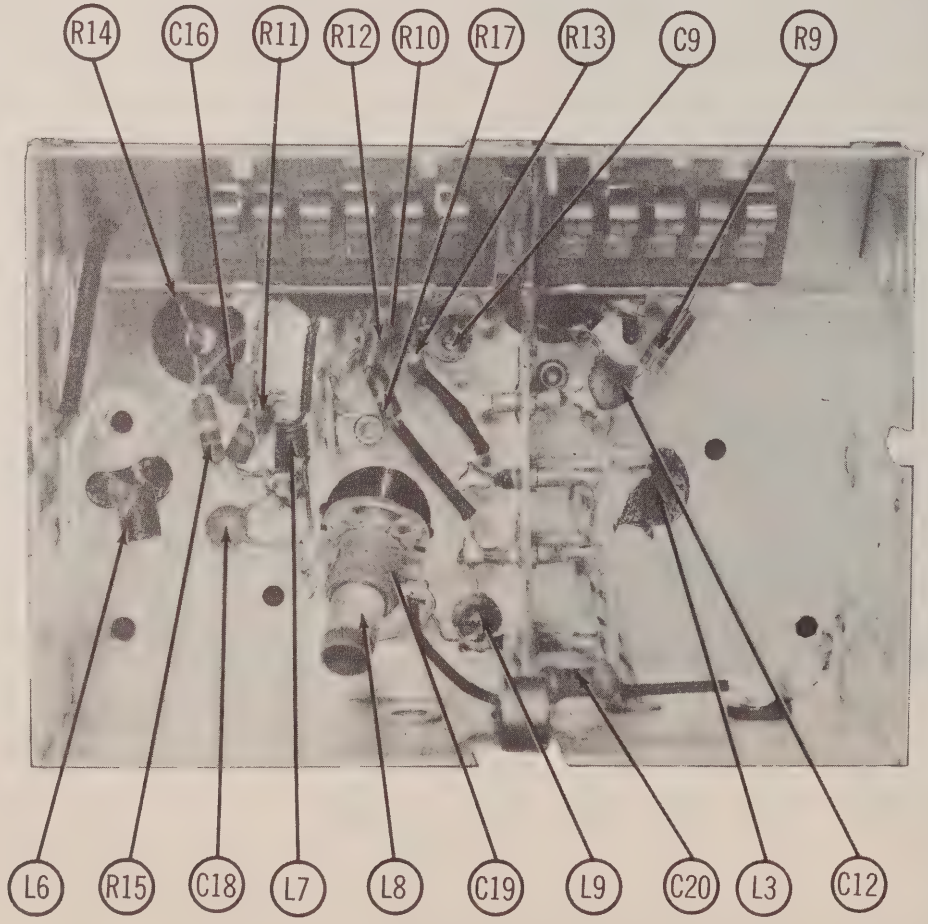
▪ MEASURED FROM PIN 3 OF V15



TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

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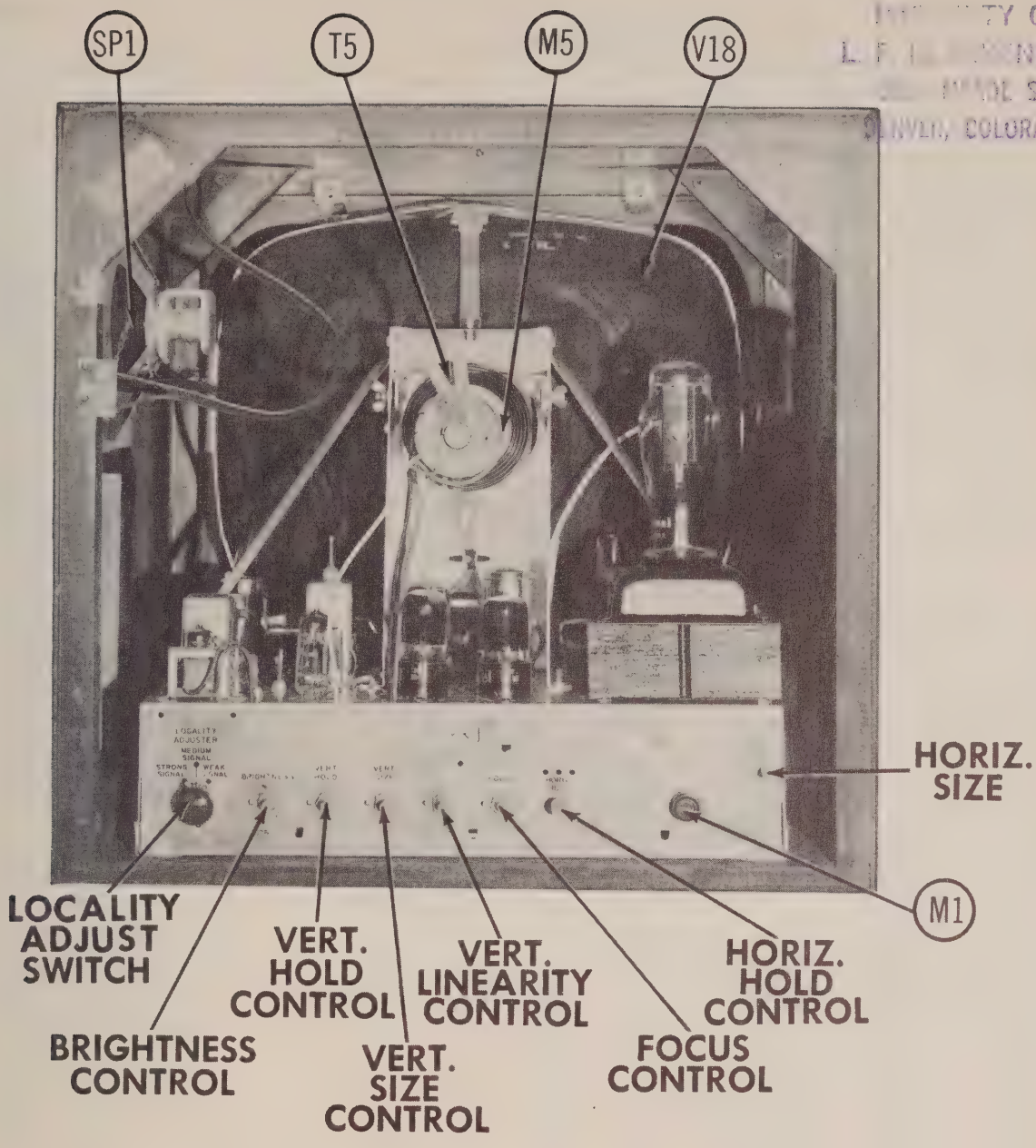
NSHIP
MAPLE ST.
DENVER, COLORA



CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and turn in a TV station, preferably a test pattern. Adjust the horizontal hold (B1) until the picture synchronizes horizontally. Adjust the width control (B2) for a picture slightly wider than necessary to fill the mask horizontally.

DISASSEMBLY INSTRUCTIONS

1. Remove 5 push on type control knobs from front panel.
2. Remove 11 wood screws. Remove rear cover.
3. Disconnect built-in antenna. Loosen 2 wood screws. Remove antenna bracket.
4. Disconnect speaker plugs from chassis. Remove 4 speaker nuts. Remove speaker.
5. Remove 4 chassis bolts. Remove chassis.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

PROPERTY OF
L. F. BLANKENSHIP
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6BQ7	6BQ7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	6AH6	6AH6	7BK	
V7	Sound IF Amp.	6AU6	6AU6	7BK	
V8	Ratio Detector	6AL5	6AL5	6BT	
V9	AF Amplifier-Horiz. AFC	6SN7GT	6SN7GT	8BD	
V10	Audio Output	6W6GT	6W6GT	7S	
V11	Sync Separator Sync Phase Inv.	6SN7GT	6SN7GT	8BD	
V12	Vert. Oscillator-Vert. Output	12BH7	12BH7	9A	
V13	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V14	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V15	Damper	6W4GT	6W4GT	6LG	
V16	HV Rectifier	1B3GT	1B3GT	3C	
V17	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V18	17HP4	17HP4 17RP4	12C 12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SENTINEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	350	25E65	AFH3-159		UPT4450-1020		FP375	TVL-3764	
B	▲40	350								
C	▲100	200								
C2A	60	200	25E62	PRS200/30-30		UP6025		TC68		Red
B	5	200		PRS250/4		BR425		TC50X		Plain
C3	20	450	25E64	PRS450/30		BR2045A		TC75	TVA-1709	
C4A	30	300	J5E63	PRS450/30		UPT3145		TC62		Red
B	10	350		PRS450/10				TC58		Plain
C5	10	50	25E66	PRS50/10		BR105		TC32	TVA-1304	
C6	10	50	25E67	PRS50/10		BR105		TC33	TVA-1304	
C7	3-9		31A-079		829-10					
C8	3.9		CD8C030C							
C9	.5-3		31A-069		829-3			CT585A		
C10	47		CD8Q470K	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C11	1.5		CD8C1R5M	SII.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCC B-V15	
C12	1000		CD8Y102Z	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C13	47		CD8Q470K	SI47	D8-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C14	.5-3		31A-089		829-3			CT585A		
C15	10		CD10C100K	SII0NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C16	5		CD8U050C		TCN-5		N750K-050	NT-555	5TCUB-V5	
C17	1000		CD8Y102Z	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C18	6.8		CD8C68*C	SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V6S	
C19	68	500	13B-052	1469-00007		5R5C7			MS-47	
C20	120		13D-055	SI120	D6-121	TM5T12	GP2K-121	LL-5312	5GA-T12	
C21	1000		23E2025-3	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C22	1000		23E2025-3	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C23	1000		23E2025-3	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C24	1000		23E2025-3	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C25	1000		23E2025-3	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C26	1000		23E2025-3	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C27	1000		23E2025-3	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C28	1000		23E2025-3	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C29	1000		23E2025-3	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	Note 1
C30	1000		23E2025-3	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C31	1000		23E2025-3	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C32	5000		23E2025	BPD-005	DD-502	TM5D5	81I-005	DC-525	5HK-D5	
C33	.25	100	23E122	P488-25		PTE4P25		PT4025	2TM-P25	
C34	10		23E25	SI0NT50	TCN-10		N750K-100	NT-541	5TCU-Q1	
C35	.1	200	23E3216	P268-1		DF-104	PJ2P1	PT401	2TM-P1	
C36	5000		23E2025	BPD-005	DD-502	TM5D5	81I-005	DC-525	5HK-D5	
C37	150		23E2027-10	SI150	D6-151	5W5T15	GP2K-151	UC-5315	5GA-T15	
C38	30		23E23		TCZ-30		N P0K-300	PT401	4TM-P1	
C39	.1	400	23E3416	P488-1		PTE4P1			5TCCB-V22	
C40	2.2		23E21		TCZ-2.2		N750K-2R2			
C41	20		23E22				N150K-200			
C42	5000		23E2025	BPD-005	DD-502	TM5D5	81I-005	DC-525	5HK-D5	
C43	5000		23E2025	BPD-005	DD-502	TM5D5	81I-005	DC-525	5HK-D5	
C44	1000		23E2025-3	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C45	1000		23E2025-3	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	Note 1
C46	470	500	23E3500-40	1469-0005		5R5T5		MC8245	MS-35	
C47	1000		23E2027-9	SI000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C48	5000		23E2025	BPD-005	DD-502	TM5D5	81I-005	DC-525	5HK-D5	
C49	.039	400	23E3423	P888-04		PTE6S4		PT634	6TM-S4	
C50	.0033	400	23E3407	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33	
C51	.0047	400	23E3408	P688-0047	D8-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C52	.0047	600	23E3606	P688-0047	D8-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C53	150			SI150	D6-151	5W5T15	GP2K-151	UC-5315	5GA-T15	Note 2
C54	.0047	600	23E3608	P688-0047	D8-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C55	30		23E23				NP0L-330			
C56	.047	400	23E3414	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C57	.0047	400	23E3408	P688-0047	D8-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C58	.0047	400	23E3408	P888-0047	D8-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C59	.01	400	23E3424							
C60	.0047	400	23E3408	P888-0047	D8-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SENTINEL PART No.	AEROVOX PART No	CENTRALAB PART No	CORNELL-DUBILIER PART No	ERIE PART No.	MALLORY PART No	SPRAGUE PART No	NOTES
C61	.047	400	23E3414	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C62	.047	400	23E3414	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C63	5000		23E2025	BPD-005	DD-502	TM5D5	81I-005	DC-525	5HK-D5	
C64	470	500	23E3500-40	1468-0005	D6-471	5W5T5	GP2K-471	MC245	1FM-35	
C65	470	500	23E3500-40	1468-0005	D6-471	5W5T5	GP2K-471	MC245	1FM-35	
C66	.001	400	23E3404	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C67	47		23E2030-15	SI47N750	TCN-47		N750K-470	NT-5547	5TCU-Q47	
C68	.001	400	23E3410	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C69	470	500	23E3500-40	1468-0005	D6-471	5W5T5	GP2K-471	MC245	1FM-35	
C70	.01	400	23E3410	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C71	.0033	400	23E3407	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33	
C72	.01	400	23E3410	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C73	390	500	23E3500-39	1469-0004		5R5T4		MCB343	MS-34	
C74	4000	500	23E2033-4	1464-004				MCB463	MS-34	
C75	680	500	23E3500-85	1469-0007		2R5T7			MS-37	
C76	5000		23E2025	BPD-005	DD-502	TM5D5	81I-005	DC-525	5HK-D5	
C77	.1	400	23E3416	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C78	.1	600	23E3616	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C79A	10000	1000	23E2037-6							
B	10000	1000								

Note 1. Not used in all Models.
Note 2. Some Models use 220MMF in this application (Part #23E2027-6)

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No	IRC PART No	CLAROSTAT PART No.	CENTRALAB PART No	MALLORY PART No	INSTALLATION NOTES
R1A	2500Ω	½	28E84	QJ-383 *		8BBT-T25-S		Contrast-Tapped @ 2000Ω-Panel
B	1Meg	½						Volume & Sw. tapped @ 225KΩ-Rear
R2A	1Meg	½	28E85	QU-137	AC-61-S	AB-69	U-54	Tone
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R2A.
R3A	1Meg	½	28E89	QU-137	AC-61-S	AB-69	BU-54	Focus
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R3A.
R4A	750Ω	½	28E86	QU-105	AC-8-S	AB-5	U-4	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R4A.
R5A	6Meg	½	28E88	QU-141	AC-65-S	AB-87	BU-87	Vert. Size-See Note 1,
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A.
R6A	1Meg	½	28E90	QU-133	AC-81-S	AB-89	BU-54	Vert. Hold-See Note 2.
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A.
R7A	5.1Meg	½	28E87	QU-141	AC-65-S	AB-87	BU-87	Brightness-See Note 3.
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R7A.

Note 1. Add a 1MegΩ resistor in series with clockwise terminal and positive side of C5.
Note 2. Add a 330KΩ resistor in series with clockwise terminal and ground.
Note 3. Add a 100KΩ resistor in series with clockwise terminal and ground.
* CONCENTRIKIT EQUIVALENT - KIT K-3 BASE ELEMENTS & SHAFTS B27-111X & P6-318 (Panel)
B13-137X & R9-314 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.	NOTES
R8	15KΩ	½	27E153-2	BTS-15K	
R9	47KΩ	½	27E473-2	BTS-47K	
R10	100KΩ	½	27E1009-27	BTS-100K	
R11	180KΩ-5%	½	27E1009-12		
R12	100KΩ-5%	½	27E1009-27		
R13	1500Ω	½	27E152-2	BTS-1500	
R14	10KΩ	½	27E103-2	BTS-10K	
R15	220KΩ	½	27E103-2		
R16	10KΩ	½	27E103-2	BTS 10K	
R17	10KΩ	½	27E103-2	bTS-10K	
R18	1000Ω	½	27E102-2	BTS-1000	
R19	1000Ω	½	27E102-2	BTS-1000	
R20	4700Ω	½	27E1009-26	BTS-4700	
R21	470Ω	½	27E470-3		
R22	1000Ω	½	27E102-2	BTS-1000	
R23	1000Ω	½	27E102-2	BTS-1000	
R24	8200Ω	½	27E1009-22	BTS-8200	
R25	47Ω	½	27E470-2		
R26	1000Ω	½	27E102-2	BTS-1000	
R27	8200Ω	½	27E822-3	BTA 8200	
R28	56000-5%	½	27E1009-8		
R29	180Ω	½	27E181-2	BTS-180	Note 2
R30	1000Ω	½	27E102-2	BTS-1000	Note 2
R31	1000Ω	½	27E102-2	BTS-1000	
R32	1.5Meg	½	27E155-2	BTS-1.5Meg	
R33	5600Ω-5%	½	27E1009-2	BTS-5600-5%	
R34	22KΩ	½	27E223-2	BTS-22K	
R35	5 Meg	½	27E105-2	BTS-1 Meg	
R36	33KΩ	½	27E333-3	BTA-33K	
R37	5600Ω	½	27E1009-8	BTS-5600	
R38	1000Ω	½	27E102-3	BTS-1000	
R39	39000 5%	2	27E1009-48	BTS-3900-5%	
R40	10KΩ	½	27E103-2	BTS 10K	
R41	470K Ω	½	27E474-2	BTS-470K	
R42	1.5Meg	½	27E155 2	BTS-1.5Meg	
R43	100KΩ-5%	½	27E1009-10	BTS-100K-5%	
R44	150Ω	½	27E151-2	BTS-150	
R45, R46	10K Ω	½	27E103-2	BTS-10K	
R46	470Ω	½	27E471-2	BTS-470	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.	NOTES
R47	33KΩ	½	27E333-2	BTS-33K	
R48	10KΩ-5%	½	27E103-2	BTS 10K-5%	
R49	10KΩ-5%	½	27E103-2	BTS-10K-5%	
R50	68KΩ	½	27E683-2	BTS-68K	
R51	1200Ω	½	27E122-2	BTS-1200	
R52	33KΩ	1	27E333-2	BTA-33K	
R53	470KΩ	½	27E474-2	BTS-470K	
R54	2 2Meg	½	27E225 2	BTS-2 2Meg	
R55	1 2Meg	½	27E105-2	BTS 1 2Meg	Note 3
R56	220Ω	½	27E222 2	BTS-220Ω	
R57	22KΩ	½	27E223-2	BTS-22K	
R58	560KΩ	½	27E564-2	BTS-560K	
R59	6800Ω-5%	½	27E682-2	BTS-6800-5%	
R60	3300Ω	½	27E332-2	BTS-3300	
R61	22KΩ	½	27E223-2	BTS-22K	
R62	10KΩ	½	27E103-2	BTS 10K	
R63	87000Ω	5	27E876-2	1 3/4A-9000	
R64	1800Ω	½	27E182-2	BTS 1800	
R65	1800Ω	½	27E182 2	BTS-1800	
R66	120Ω	½	27E121-2	BTS-120	
R67	82KΩ	½	27E823-2	BTS 82K	
R68	82KΩ	½	27E823-2	BTS-82K	
R69	100KΩ	½	27E1009 10	BTS-100K	
R70	4.7Meg	½	27E475-2	BTS-4.7Meg	
R71	33KΩ	½	27E333-2	BTS-33K	
R72	8800Ω-5%	½	27E882-5	BTS-8800 5%	
R73	6800Ω-5%	1	27E682-3	BTA-6800-5%	
R74	1200Ω	½	27E122-2	BTS-1200	
R75	150KΩ	½	27E154-2	BTS-150K	
R76	5600Ω	½	27E1009-8	BTS-5600	
R77	120KΩ	½	27E1009-47	BTS 120K	
R78	33KΩ	½		BTS 330K	Note 1
R79	82000-5%	½	27E1009-22	BTS-8200 5%	
R80	470KΩ	½	27E474-2	BTS-470K	
R81	10Ω	½	27E106-13	1 3/4A-15K	
R82	2.2Ω	½	27E1015-2		
R83	22000	½	27E222-2	bTS-2200	
R84	470KΩ	½	27E474-2	BTS-470K	

Note 1. Not used in all models.
Note 2. Some models use a 82Ω resistor in this application.
Note 3. Some models use a 1 Meg resistor in this application.

TRANSFORMER (POWER)

ITEM No	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SENTINEL PART No	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No
T1	117VAC	550VCT	5VAC	6.3VAC @ 1.2A SEC. 1 6.3VAC @ 8.2A	22E74				

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: SENTINEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T2	50Ω	210Ω	22E70	A-8125	A-3000 ①	TBO-1	A-97X	Vert. Osc. Trans. Horiz. Output Trans.
T3	365Ω tap @ 50, 22.5Ω, 250, 45Ω	9Ω SEC. 2 0Ω	22E75					
T4	800Ω tap @ Ω		22E73	A-8140 ② ③	A-3081 ↓	TSO-62 ④	A-103X ↓	Vert. Output Trans.
T5A	40Ω		20E788-2	DY-10 ⑤	MDF-30 ⑤	TY-4 ⑤	Y-20 ⑤	Horiz. Deflection Coils
B	3.3Ω		20E788 ④					Vert. Deflection Coils

① Drill one new mounting hole.
② Drill two new mounting holes.
③ Connect as Auto Transformer.
④ Alternate Deflection Yoke
⑤ Use original deflection network.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SENTINEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T6	2.15K Ω	2.8Ω	200Ω	.6Ω	22E71	A-3876	A-2928	RO-2	S-2X	

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: SENTINEL PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	6	PM	2.8Ω	1E49 1E49-2 ① 1E43 ② 1E43-2 ③ 1E43-3 ④	ST-108 Mod P6-X	6A1	① Alternate 6 PM Speaker ② 8 PM Speakers used in Models 456 & 457

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE @ CURRENT 1000 (%)	REPLACEMENT DATA: SENTINEL PART No	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No
L1	200A	66 4.:	1 8 Hy.	22E73	C-2325 ↓	C-2996 ↓	TH 1733 ↓	K-21X ↓

↓ Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES PRI	DC RES SEC	REPLACEMENT DATA: SENTINEL PART No	MERIT PART No	IRC PART No	NOTES
L2	Ant. Coil	0Ω	0Ω	31F-522			Channe. 2
L3	Fil. Choke	0Ω		34A-546			
L4	Feedback Coil	0Ω		31B-296			
L5	RF, Mixer Grid & Osc. Coil	0Ω		31F-622			Channe. 2
L6	Fil. Choke	0Ω		34A-575			
L7	RF Choke	0Ω		31B-638			
L8	Cons. Plate	7Ω		31A 095	TV-102 *		
L9	RF Choke	1.2Ω		31B-230			
L10	1st. Video IF	.2Ω		20E780			
L11	2nd. Video IF	.2Ω	.2Ω	20E779			
L12	3rd. Video IF	.2Ω	.2Ω	20E78.			
L13	Fil. Choke	1.2Ω		2E92		C.A	1 5 Microhenries
L14	4th. Video IF	.5Ω	.5Ω	20E782			Includes trap, also includes series peaking coil, 300MMF capacitor & 56KΩ resistor
L15	Shunt Peaking Coil	15Ω		20E363-19			390 Microhenries
L16	Series Peaking Coil	12Ω		20E363-21	TV-185		300 Microhenries
L17	4.5MC Trap	5Ω		20E785	TV-151		
L18	Shunt Peaking Coil	19.2		20E363-20	TV-188		560 Microhenries
L19	Sound IF	3Ω		20E785	TV-151		
L20	Ratio Det.	4Ω	.8Ω,T	20E783	TV-110		Tertiary Winding - .4Ω
L21	Horiz. Osc.	55Ω		20E788	TV-163		

* Enlarge mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: SENTINEL PART No.: FUSE	SENTINEL PART No.: HOLDER	LITTELFUSE PART No.: FUSE	LITTELFUSE PART No.: HOLDER	BUSS PART No.: FUSE	BUSS PART No.: HOLDER
M1	3AG Slo-Blo	3 A 125V.	40E8-10	55E57	313003	342001	MDL-3	HKP

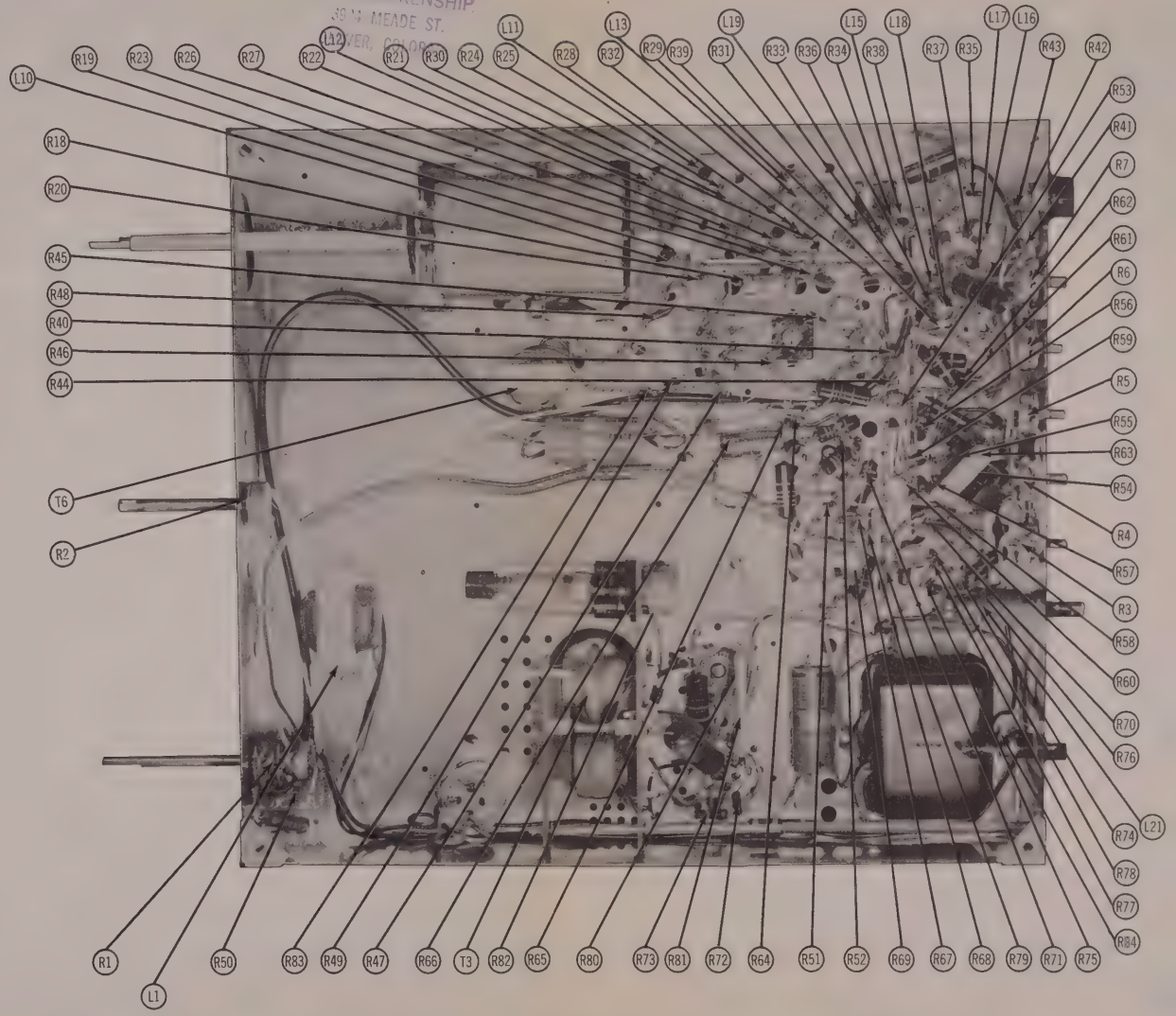
SENTINEL
MODELS 1U-454, 1U-455, 1U-456, 1U-457, 454, 455, 456, 457

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	SENTINEL PART No.	NOTES
M2	RF Tuner	20E787	
M3	Crystal Diode		Video Detector (1N60)
M4	Switch	29E29	Locality Adjuster
M5	Centering Magnet		Mounted on back cover of yoke
M6	Ion Trap		
	Antenna Coil	31F-523	Channel #3
	Antenna Coil	31F-524	Channel #4
	Antenna Coil	31F-525	Channel #5
	Antenna Coil	31F-526	Channel #6
	Antenna Coil	31F-527	Channel #7
	Antenna Coil	31F-528	Channel #8
	Antenna Coil	31F-529	Channel #9
	Antenna Coil	31F-530	Channel #10
	Antenna Coil	31F-531	Channel #11
	Antenna Coil	31F-532	Channel #12
	Antenna Coil	31F-533	Channel #13
	RF, Mixer Grid & Osc. Coil	31F-623	Channel #3
	RF, Mixer Grid & Osc. Coil	31F-624	Channel #4
	RF, Mixer Grid & Osc. Coil	31F-625	Channel #5
	RF, Mixer Grid & Osc, Coil	31F-626	Channel #6
	RF, Mixer Grid & Osc. Coil	31F-627	Channel #7
	RF, Mixer Grid & Osc. Coil	31F-628	Channel #8
	RF, Mixer Grid & Osc. Coil	31F-629	Channel #9
	RF, Mixer Grid & Osc, Coil	31F-630	Channel 1#10
	RF, Mixer Grid & Osc, Coil	31F-631	Channel #11
	RF, Mixer Grid & Osc. Coil	31F- 632	Channel #12
	RF, Mixer Grid & Osc. Coil	31F-633	Channel #13
	Cabinet Back Assy.	20E774	Includes line cord.
	Cabinet Back Assy.	20E774-2	Includes line cord-Models 455, 1U-455, 456, 1U-456, 457, 1U-457.
	Safety Glass	9E45-3	
	Safety Glass	9E45	Models 455, 1U-455, 456, 1U-456, 457, and 1U-457.
	Mask	36E84-2	
	Mask	36E83	Models 455, 1U-455, 456, 1U-456, 457, and 1U-457.
	Knob	37E21-23	Tone control
	Knob	37E71-5	Fine Tuning
	Knob	37E71-6	Contrast
	Knob	37E72-12	Off/On Volume,
	Knob	37E72-11	Channel Selector

KENSHIP
3914 MEADE ST.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

STROMBERG-CARLSON MODEL SR-401

L. F. BLAKENSHIP
3924 MEADE ST.
DENVER, COLORADO

STROMBERG-CARLSON MODEL SR-401

STROMBERG-CARLSON MODEL SR-401

TRADE NAME	Stromberg-Carlson Model SR-401
MANUFACTURER	Stromberg-Carlson Co., 100 Carlson Rd., Rochester 3, N.Y.
TYPE SET	AC Operated AM-FM Superheterodyne Tuner for Custom Installation
TUBES (Twelve)	Types 6CB6 FM RF Amp., 6AU6 FM Mixer, 12AT7 FM Osc. -AFC, 6BA6 1st. FM IF Amp., 6BA6 2nd. FM IF Amp., 6AU6 FM Limiter, 6AL5 FM Ratio Det., 6BA6 AM RF Amp., 6BE6 AM Conv., 12AU7 AM Det.-AF Amp., 6AL7GT Tuning Ind., 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC — RATING .53 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	530-1650 KC — FREQ. MOD. 87-109 MC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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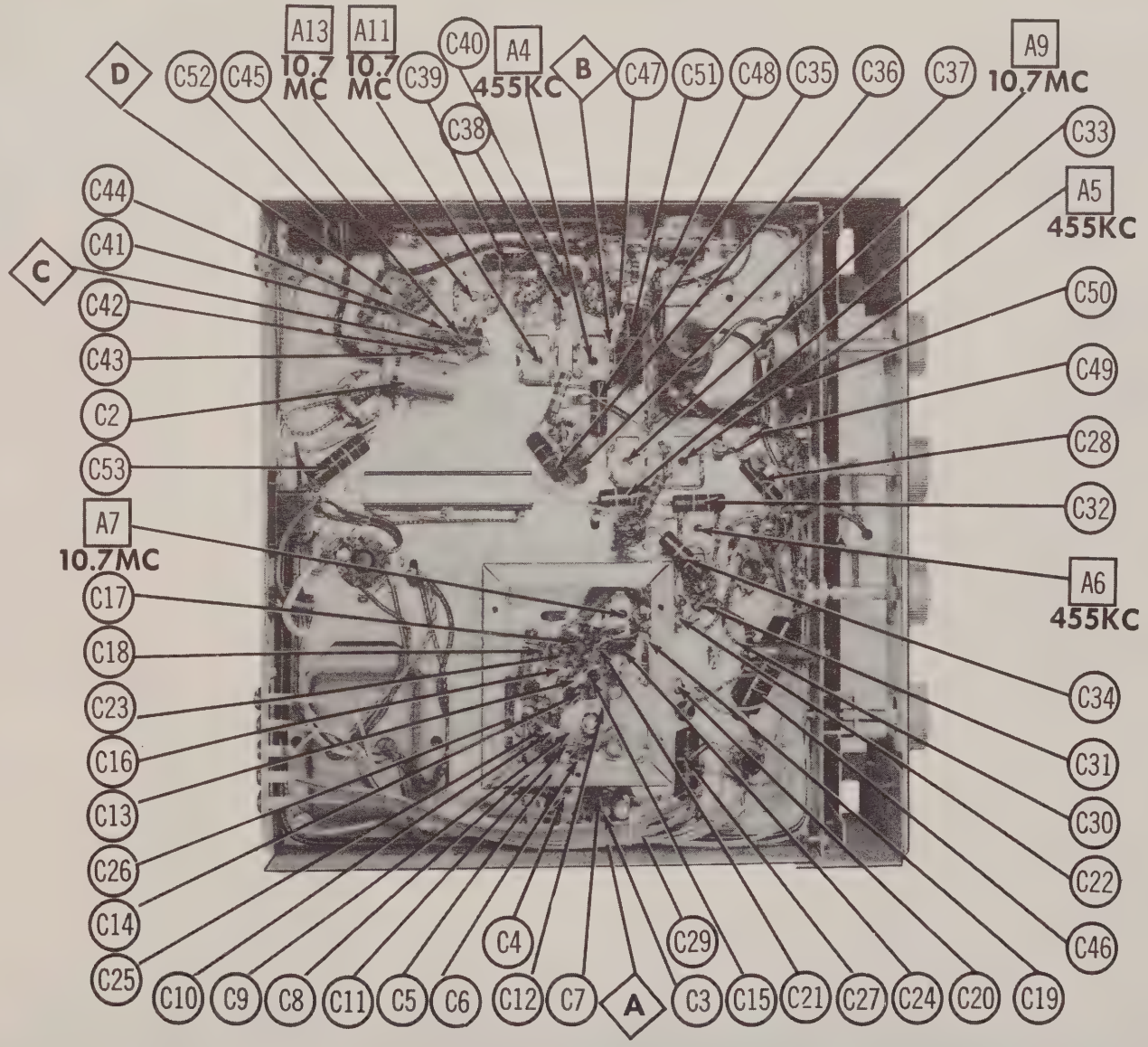
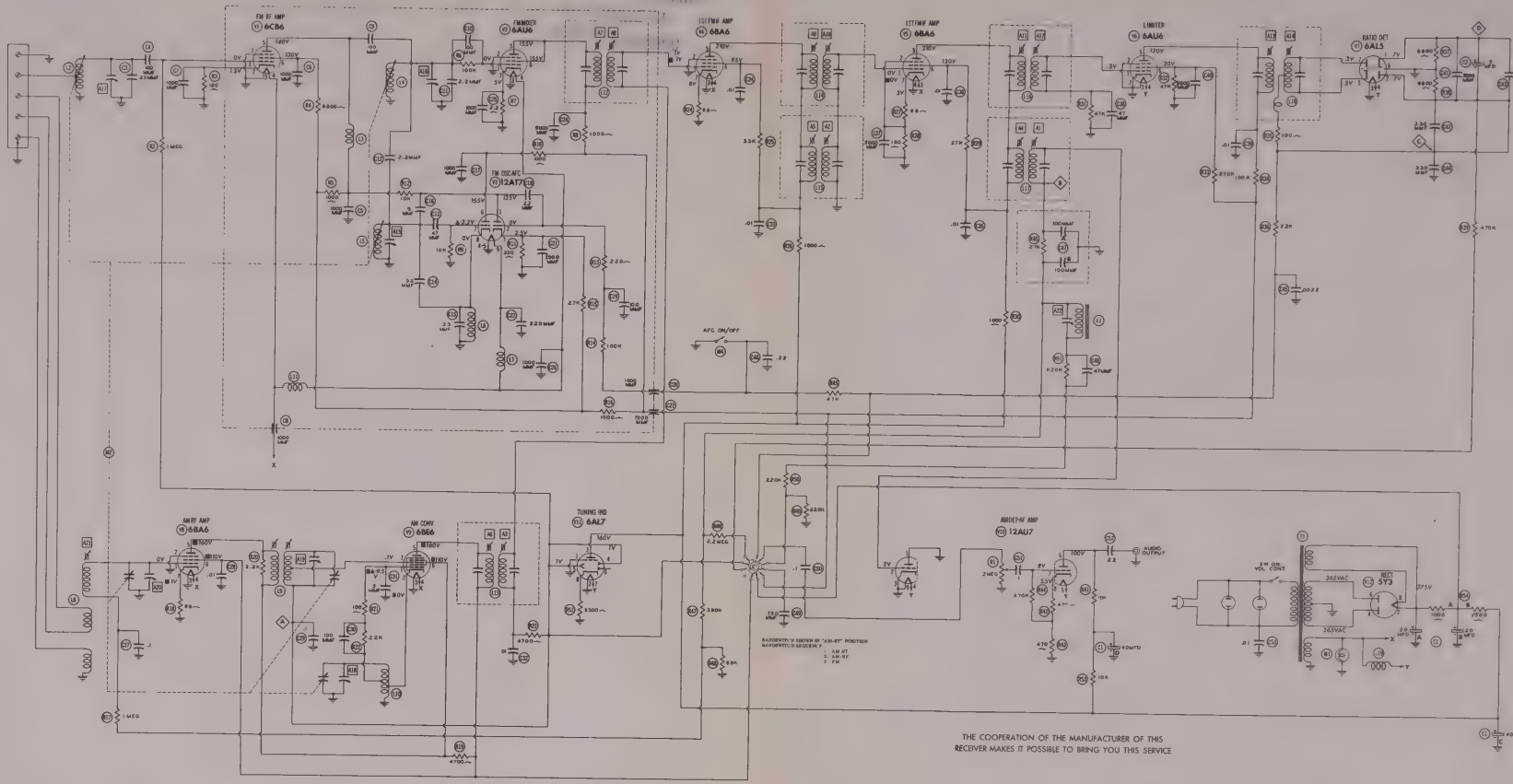


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



IF=455 KC–AM
IF= 10.7 MC–FM

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V-1	6CB6	1.1Meg	180Ω	0Ω	1Ω	19.5KΩ	110Ω	0Ω		
V-2	6AL6	200Ω	0Ω	0Ω	1Ω	19.5KΩ	24.5KΩ	2.2KΩ		
V-3	12AT7	115,000 (180KΩ)	105KΩ	330Ω	0Ω	∞	24.5KΩ	19KΩ	1KΩ	1Ω
V-4	6BA6	*2.1Meg	0Ω	0Ω	1Ω	120Ω	135KΩ	68Ω		
V-5	6BA6	22,500	120Ω	0Ω	1Ω	135Ω	120KΩ	210Ω		
V-6	6AL6	470KΩ	0Ω	0Ω	1Ω	110KΩ	69KΩ	0Ω		
V-7	6AL5	0.5MΩ	1.8KΩ	0Ω	1Ω	∞	0Ω	140KΩ		
V-8	6BA6	1.1 Meg	0Ω	1Ω	0Ω	*25.5KΩ	*25.5KΩ	88Ω		
V-9	6BE6	52KΩ	0Ω	0Ω	1Ω	*25.5KΩ	*25.5KΩ	*2.5Meg		
V-10	12AU7	1Ω	330KΩ	0Ω	1Ω	220KΩ	220KΩ	470Ω	84KΩ	0Ω
V-11	6AL7GT	0Ω	0Ω	1MΩ	*2.5Meg	*2.5Meg	*2.5Meg	1Ω	1.8KΩ	
V-12	5Y3GT	2MΩ	1Ω, 440Ω *330KΩ	2MΩ	120Ω	0MΩ	120Ω	1MΩ	2.1KΩ *330KΩ	

ALL MEASUREMENTS TAKEN WITH A.F.C. SWITCH IN "OFF" POSITION
ALL MEASUREMENTS TAKEN "FM" POSITION UNLESS OTHERWISE SPECIFIED
* MEASURED IN "A.M." POSITION
† MEASURED FROM PIN 8 OF V12

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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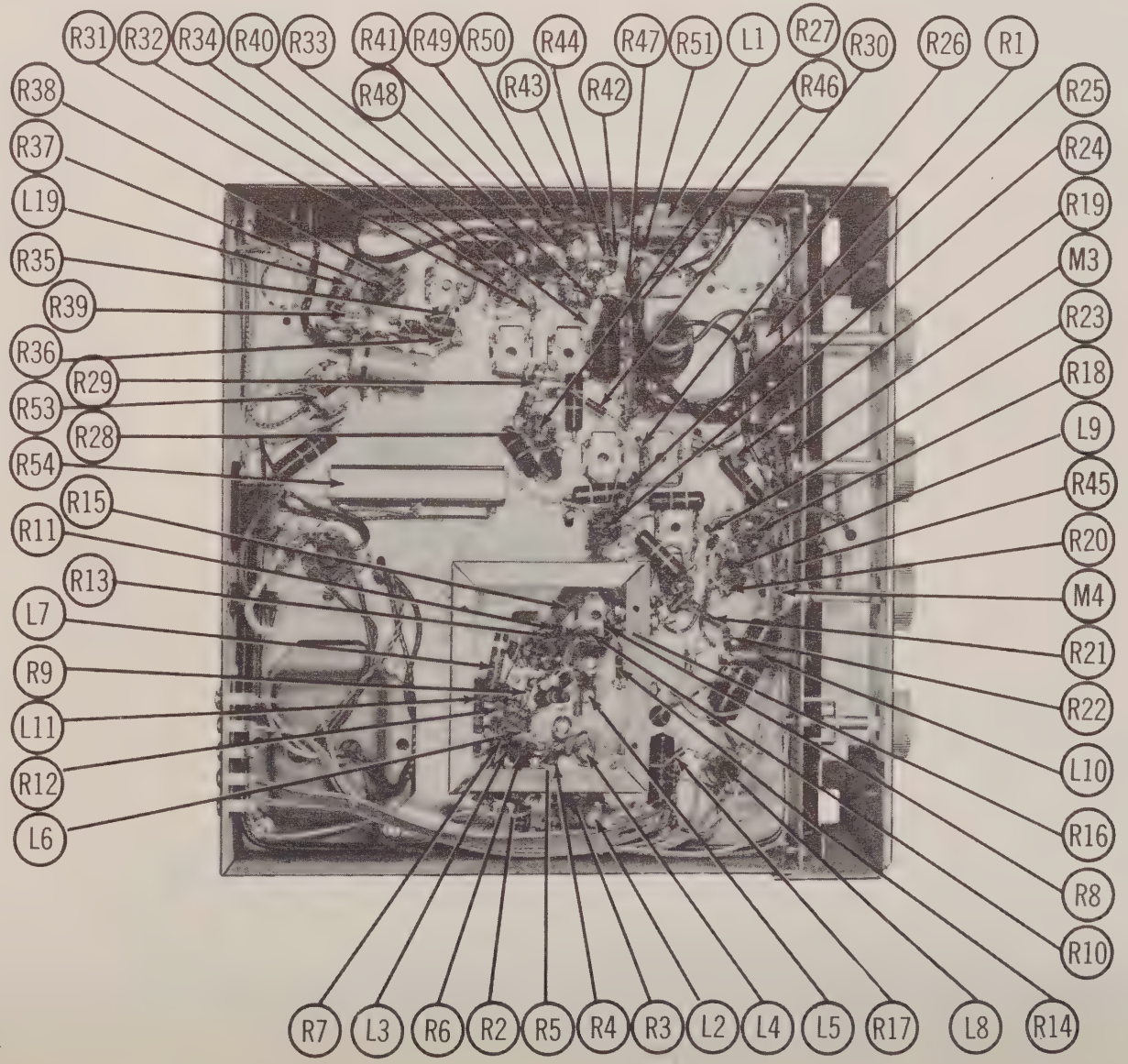


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

With tuning gang fully closed adjust dial pointer to marker at top left of dial.
Preset FM tuning slugs flush with bottom of glass coil forms.

AM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 6BE6 (V9). Low side to chassis.	455 KC (Unmod.)	AM	Near low freq. end.	DC probe to point (A). Common to chassis.	A1, A2 A3, A4 A5, A6	Adjust for maximum deflection. While adjusting A1, A2 and A3 shunt 1000Ω across primary of transformer being adjusted. While adjusting A4, A5 and A6 shunt 1000Ω across secondary of transformer being adjusted. maintain generator output to provide 1 to 2 volts at VTVM.

AM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 6BE6 (V9) Low side to chassis	455 KC (22.5KC Swp)	AM	Point of non-interference near low frequency end.	Vert. amp. to point (B). Low side to chassis.	A1, A2, A3, A4, A5, A6	Adjust for symmetrical broad topped response similar to fig.1 centered about 455KC.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Turn AFC control to "OFF" position.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
2.	.01MFD	High side to high side of L2. Low side to chassis.	10.7MC (Unmod)	FM	Low frequency end of dial.	DC probe to point (A). Common to chassis.	A7, A8, A9, A10 A11, A12 A13	Adjust for maximum deflection. Attenuate generator to maintain 1 to 2 volts at VTVM.
3.	"	"	"	"	"	DC probe to point (C). Common to chassis.	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.
Leave AFC control at "OFF" position.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
2.	.01MFD	High side to high side of L2. Low side to chassis.	10.7MC (450KC Swp)	FM	Low frequency end of dial.	Vert. Amp. to point (D). Low side to chassis.	A7, A8, A9, A10 A11, A12 A13	Disconnect stabilizer capacitor C2. Adjust for curve of maximum amplitude and symmetry as in fig. 2.
3.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A14	Reconnect capacitor C2. Adjust so that 10.7MC occurs at center of crossover lines as in fig.3. SLIGHTLY retouch A13 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	Two 120Ω Carbon Resistors	Across FM antenna & ground terminals with 120Ω in each lead.	108MC (Unmod)	FM	108MC	DC probe to point (A) Common to chassis.	A15	Adjust for maximum deflection.
5.	"	"	88MC	"	88MC	"		Check dial calibration. If incorrect adjust position of C14 with respect to L5 (osc.coil) for correct calibration at 88MC. Repeat steps 4 & 5 until calibration is correct at 88 and 108MC.
6.	"	"	108MC	"	108MC	"	A16 A17	Adjust for maximum deflection. Rock tuning control about 108MC while adjusting A17. Check A15 again.
7.	"	"	100MC	"	100MC	"		Check dial calibration.
8.	"	"	90MC	"	90MC	"		Check dial calibration, If steps 7 and 8 show incorrect calibration repeat steps 4, 5 and 6.

AM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	50Ω Carbon Resistor	To loop terminals thru 50Ω.	1650 KC (Unmod)	AM	Tuning gang fully open	DC probe to point (A). Common to chassis.	A18	Adjust for maximum deflection.
10.	"	"	1400 KC	"	1400 KC	"	A19, A20	"
11.	"	"	600 KC	"	600 KC	"	A21	Adjust for maximum deflection. Repeat step 10.
12.	"	"	1000KC (10KC Mod.)	AM-HF	1000 KC	AC voltmeter across output connector	A22	Rock tuning control slowly to stop at center of slight dip between two peaks of meter reading. Adjust A22 for MINIMUM reading on meter.

FIG.1

FIG. 2

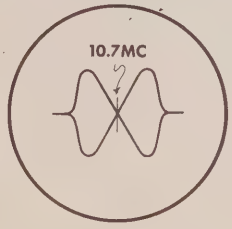


FIG. 3

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

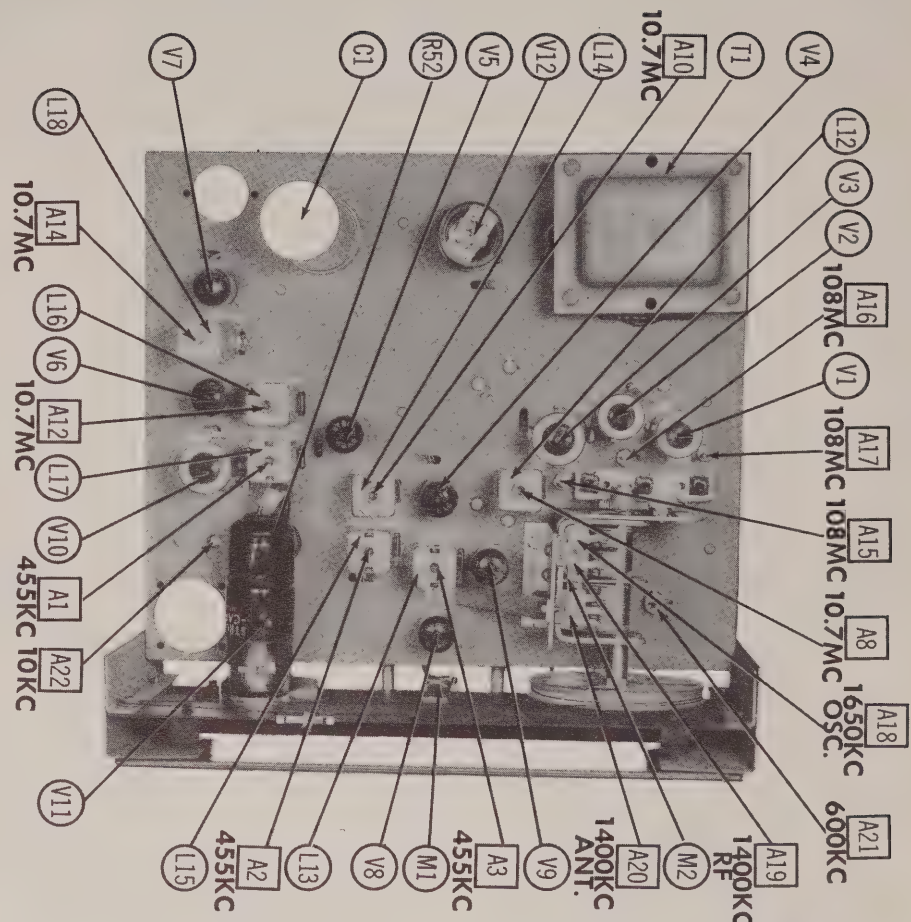
ITEM No.	USE	REPLACEMENT DATA: Stromberg-Carlson PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	FM RF Amplifier	6CB6	6CB6	7CM	
V2	FM Mixer	6AU6	6AU6	7BK	
V3	FM Oscillator-AFC	12AT7	12AT7	9A	
V4	1st. FM IF Amp.	6BA6	6BA6	7BK	
V5	2nd. FM IF Amp.	6BA6	6BA6	7BK	
V6	Limiter	6AU6	6AU6	7BK	
V7	Ratio Detector	6AL5	6AL5	6BT	
V8	AM RF Amplifier	6BA6	6BA6	7BK	
V9	AM Converter	6BE6	6BE6	7CH	
V10	AM Detector-AF Amplifier	12AU7	12AU7	9A	
V11	Tuning Indicator	6AL7GT	6AL7GT	8CH	
V12	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: Stromberg-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▫20	400	111102	AFH4-14		D013		FP447	TVL-4763	
B	■20	400		PRS450/40		BR4045A			TVA-1712	
C	▲40	400								
D	40	400								
C2	5	50	111093	PRS150/4		BR550		TC30	TVA-1303	
C3	27		110410				NP0K-270			
C4	100		110694	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C5	1000		110818	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C6	1000		110818	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C7	1000		110818	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C8	1000		110815							
C9	100		110694	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C10	100		110694	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C11	2.2		110471		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C12	2.2		110439		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C13	47		110458	SI47	D6-470		GP1K-470	UC-5447	5GA-Q47	
C14	33		110407		TCZ-33		NP0K-330		5TCC -Q33	
C15	33		110816				N220K-330			
C16	5		110584	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C17	1000		110818	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C18	2.2		110439		TCZ-2.2		NP0K-2R2		5TCCB-V22	
C19	100		110694	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C20	1000		110815							
C21	1000		110818	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C22	1000		110815							
C23	220		110453	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C24	5000		110586	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C25	1000		110818	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C26	1000		110818	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C27	.1	200	110661	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C28	.01	400	110540	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C29	.1	200	110661	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C30	100		110694	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C31	5		110413	SI5N750	TCN-5		N750K-050	NT-555	5TCU-Q5	
C32	.01	400	110540	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C33	.01	400	110540	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C34	.01	400	110540	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C35	.01	400	110540	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C36	.01	400	110540	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C37	5000		110586	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C38	47		110458	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C39	.01	400	110540	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C40	5000		110586	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C41	5000		110586	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C42	330		110463	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C43	330		110463	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C44	330		110463	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C45	.0022	400	110817	P488-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C46	.22	400	110548	P488-22		PTE4P22		PT4025	4TM-P22	
C47 A	100		♦110478	SI100	♦PC-50	TM5T1	♦1403-01	UC-531	♦100C1	
B	100			SI100		TM5T1		UC-531		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Stromberg-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C48	47		110458	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C49	750		110676	SI750	D6-751		GP2K-751	UC-5375	5GA-T75	
C50	.1	400	110546	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C51	.1	400	110546	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C52	.22	400	110548	P488-22		PTE4P22		PT4025	4TM-P22	
C53	.01	600	110555	689ZGXY-01		PJ6S1		PT611	6TM-S1	

♦ Items C47A, C47B, R40 are combined in one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Stromberg-Carlson PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	2 Meg	½	145145	Q13-139	AG-66-Z	B-76-S	U-55	Volume Note
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

Note. Control Tap ⓐ 170KΩ & 1 Meg; but are not used in this model.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Stromberg-Carlson PART No.	IRC PART No.	
R2	1Meg	½	149119	BTS-1Meg	
R3	180Ω	½	28149	BTS-180	
R4	6800Ω	1	149400	BTA-6800	
R5	1000Ω	½	149101	BTS-1000	
R6	100KΩ	½	149113	BTS-100K	
R7	2200Ω	½	28162	BTS-2200	
R8	1000Ω	½	149101	BTS-1000	
R9	10KΩ	½	149107	BTS-10K	
R10	1000Ω	½	149101	BTS-1000	
R11	330Ω	½	28152	BTS-330	
R12	10KΩ	1	149402	BTA-10K	
R13	220Ω	½	28150	BTS-220	
R14	100KΩ	½	149113	BTS-100K	
R15	27KΩ	2	149058	BTB-27K	
R16	1000Ω	½	149101	BTS-1000	
R17	1Meg	½	149119	BTS-1Meg	
R18	68Ω	½	28144		
R19	4700Ω	2	149051	BTB-4700	
R20	2200Ω	½	28162	BTS-2200	
R21	100Ω	½	149095		
R22	22KΩ	½	149109	BTS-22K	
R23	4700Ω	½	149105	BTS-4700	
R24	68Ω	½	28144		
R25	33KΩ	1	149404	BTA-33K	
R26	1000Ω	½	149101	BTS-1000	
R27	68Ω	½	28144		
R28	150Ω	½	28148	BTS-150	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Stromberg-Carlson PART No.	IRC PART No.	
R29	27KΩ	1	149403	BTA-27K	
R30	1000Ω	½	149101	BTS-1000	
R31	47KΩ	½	149111	BTS-47K	
R32	47KΩ	½	149111	BTS-47K	
R33	270KΩ	½	28184	BTS-270K	
R34	100KΩ	½	149385	BTS-100K	
R35	100Ω	½	149095	BTS-100	
R36	22KΩ	½	149234	BTS-22K	
R37	6800Ω	½	28168	BTS-6800	
R38	6800Ω	½	28168	BTS-6800	
R39	470KΩ	½	149117	BTS-470K	
R40	47KΩ	½	♦110478	BTS-47K	
R41	10KΩ	½	28170	BTS-10K	
R42	470Ω	½	28154	BTS-470	
R43	470Ω	½	28154	BTS-470	
R44	470KΩ	½	149117	BTS-470K	
R45	470KΩ	½	149117	BTS-470K	
R46	2.2Meg	½	149121	BTS-2.2Meg	
R47	390KΩ	½	28186	BTS-390K	
R48	68KΩ	½	28179	BTS-68K	
R49	220KΩ	½	28183	BTS-220K	
R50	220KΩ	½	28183	BTS-220K	
R51	820KΩ	½	28190	BTS-820K	
R52	3300Ω	½	28164	BTS-3300	
R53	15KΩ	½		BTS-15K	
R54A	1000Ω	5	149418		
B	2500Ω				

♦ Items R40, C47A, C47B are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	Stromberg-Carlson PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC ⓐ .53A	530VCT .055ADC	5V ⓐ 2A	6.3VAC ⓐ 3.4A	161441	PM-8404	P-3051		R-10B

FILTER CHOKE (10KC)

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	Stromberg-Carlson PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1		836Ω	1 Hy.	161044				

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

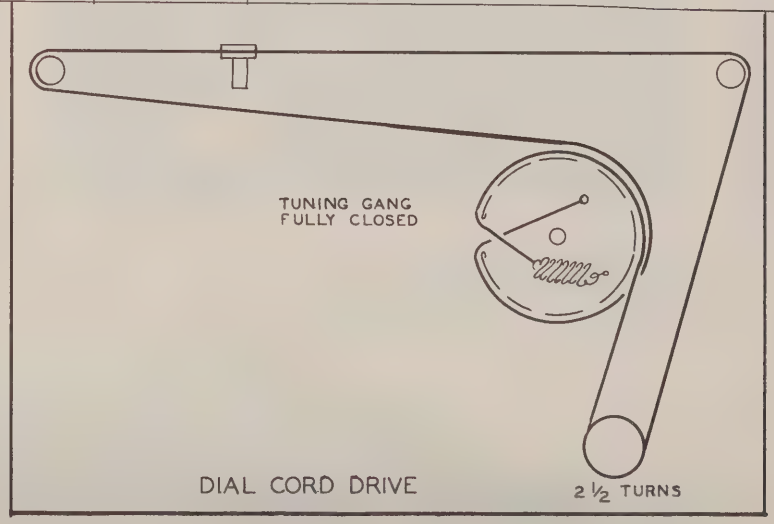
ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	Stromberg-Carlson PART No.	MERIT PART No.	IRC PART No.	
L2	FM Ant. Coil	0Ω		114097			Tapped
L3	FM RF Choke	1.8Ω		114693		CLA	2.2 Microhenries
L4	FM RF Coil	0Ω		114098			
L5	FM Osc. Coil	0Ω		114098			
L6	Cathode Choke	0Ω		114620			
L7	Fil. Choke	.14Ω		114707		CL1	.47 Microhenry
L8	AM Ant. Coil	.4Ω	5.8Ω	114122			External AM Ant. Pri. Winding -40Ω
L9	AM RF Coil	1.2Ω	10Ω	114095			Sec. Tapped ⓐ 4.2Ω
L10	AM Osc. Coil	4.4Ω		114123			Tapped ⓐ .9Ω and ⓐ 4Ω
L11	Fil. Choke	.14Ω		114707		CL1	.47 Microhenry
L12	1st. FM IF	1.3Ω	1.3Ω	114363	FM-254		
L13	1st. AM IF	9.2Ω	9.5Ω	114414	BC-352		
L14	2nd. FM IF	1.3Ω	1.3Ω	114363	FM-254		
L15	2nd. AM IF	9.2Ω	9.5Ω	114414	BC-352		
L16	3rd. FM IF	1.3Ω	1.3Ω	114363	FM-254		
L17	3rd. AM IF	9.2Ω	9.5Ω	114414	BC-353		
L18	Ratio Det.	3Ω	.3ΩCT	114404	FM-255		Tertiary Winding - .45Ω
L19	Fil. Choke	.2Ω		114618			

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					Stromberg-Carlson PART No.		
M1	Bayonet	7.5	.2	White	30933		Type #51

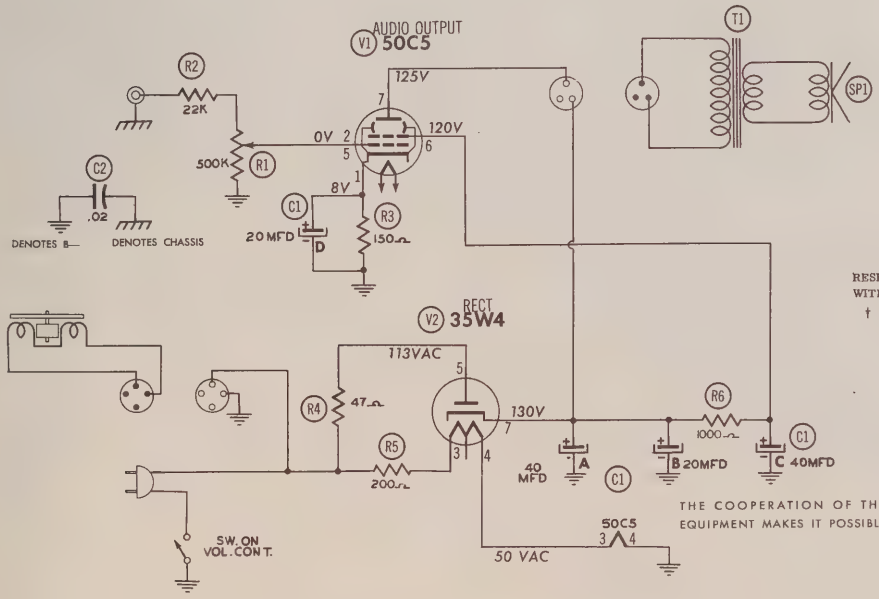
MISCELLANEOUS

ITEM No.	PART NAME	Stromberg-Carlson PART No.	NOTES
M2	Tuning Capacitor	110055	40-470MMF, 16-233MMF, 16-102MMF
M3	Switch	158048	Band Selector
M4	Switch	158049	AFC("off-on")
A22	Trimmer Capacitor	110056	10KC Filter Adjustment, 30-270MMF
	Escutcheon	125601	
	Dial Glass	122040	
	Dial Pointer	144022	
	Knob	134619	Tuning
	Knob	134620	3 Used (with dot)



PROPERTY OF

TRADE NAME	V-M Model 110
MANUFACTURER	V-M Corp., Benton Harbor, Mich.
TYPE SET	AC Operated Phono Amplifier with 3 Speed Record Player
TUBE (Two)	Types 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .43 Amp. @ 117 Volts AC



Pin No.	50C5 Res.	35W4 Res.
1	150Ω	INF
2	12Ω	INF
3	50Ω	85Ω
4	0Ω	50Ω
5	12Ω	332Ω
6	†1KΩ	56Ω
7	†170Ω	500KΩ

RESISTANCE MEASUREMENTS TAKEN WITH PHONO MOTOR DISCONNECTED
† MEASURED FROM PIN 7 OF V2.

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	INSTALLATION NOTES
		V-M PART No.	STANDARD REPLACEMENT		
V1	Audio Output	50C5	50C5	7CV	
V2	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	V-M PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	40	150		PRS1010D4A		EDL5515C		3N532	TVA-3436	Red
B	20	150								Yellow
C	40	150								Red
D	20	25								Blue
C2	.02	200		P488-02	DF-203	PTE4S2		PT412	2TM-S2	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	V-M PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	401B	Q13-133	AG-60-Z	BSK-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	V-M PART No.	IRC PART No.	
R2	22KΩ	½		BTS-22K	
R3	150Ω	½		BTS-150	
R4	47Ω	½			

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PART No.	IRC PART No.	
R5	200Ω	5		1 3/4A-200	
R6	1000Ω	½		BTS-1000	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		V-M PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2KΩ	3.4Ω	170Ω	.48Ω		A-3332 ①	A-3025 ①	RO-2 ①	S-2X ①	① Bend mounting tabs down, file out slots, mount on original mounting bracket.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	V-M PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.4Ω		ST-113 Mod. P4-X	4A07	

PHONO CARTRIDGE and NEEDLE

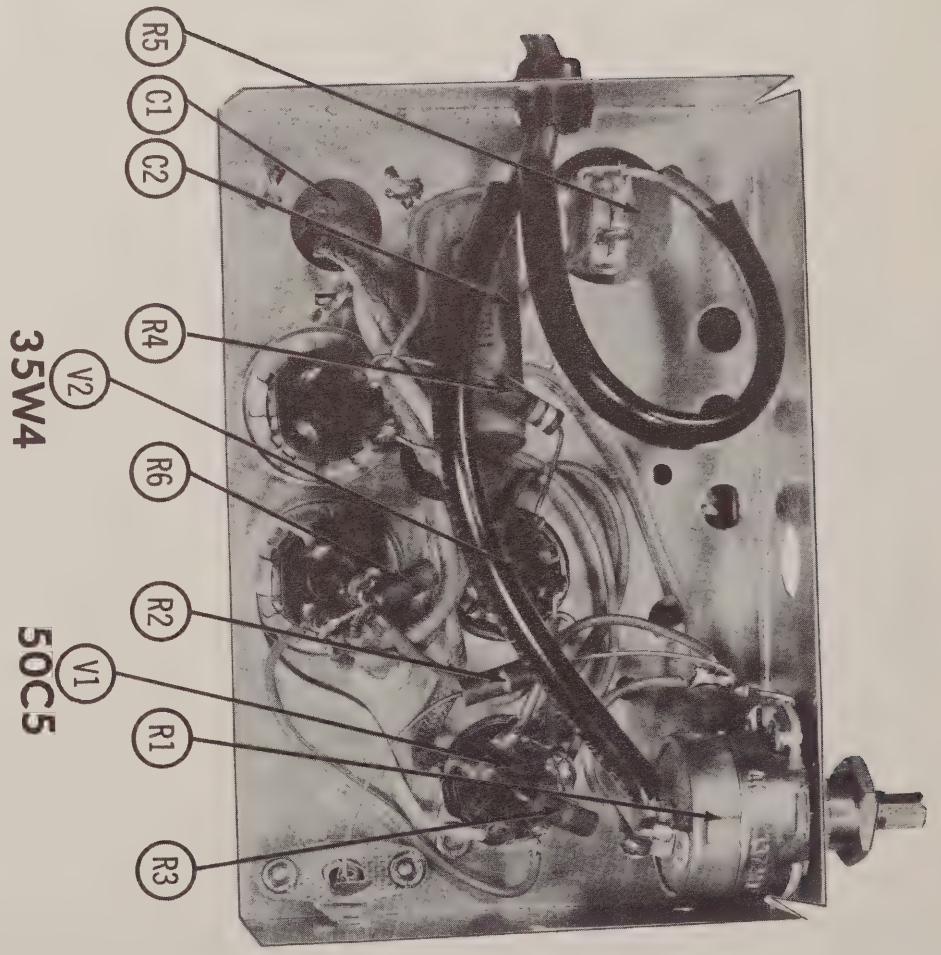
ITEM No.	REPLACEMENT DATA							REMARKS
	V-M PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1						*25H60		*Tone arm & cartridge assembly.

PHONO NEEDLE

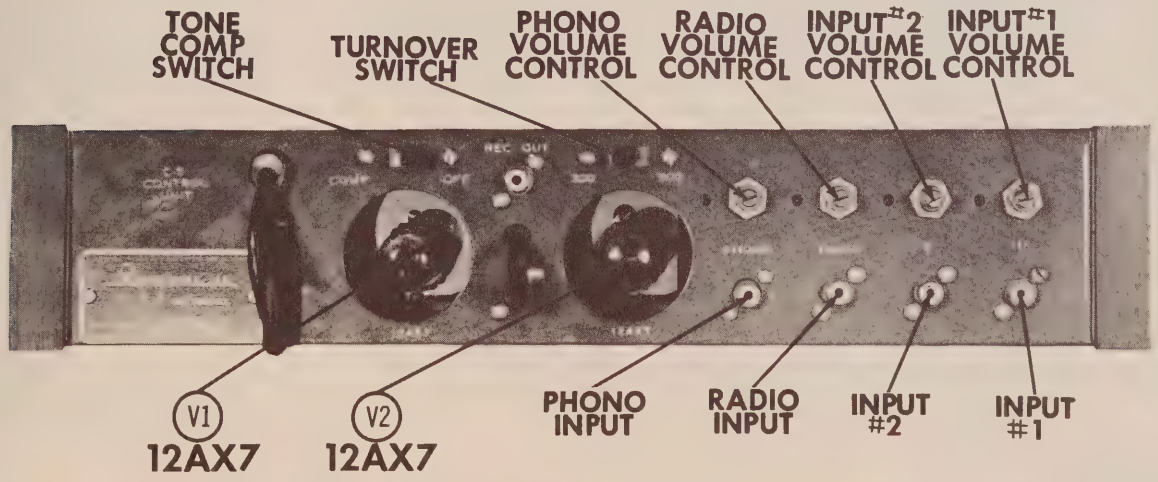
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	V-M PART No.	WALCO PART No.	JENSEN PART No.	
M2		WS-400-2	J-752 or J-152	

CHASSIS—BOTTOM VIEW



TRADE NAME	Waveforms Model A-20 & C-5
MANUFACTURER	Waveforms, Inc., 333 Sixth Ave., New York 14, N.Y.
TYPE SET	AC Operated 4 Channel Pre-Amp. & Audio Amplifier
TUBES (Six)	Types 12AX7 Pre-Amp., 12AX7 AF Amp., 12AX7 AF Amp. -Phase Inv., (2) 5881 or (2) 6L6G Audio Output, 5V4G Rectifier
POWER SUPPLY	110-120 Volts AC RATING 1.12 Amp. @ 117 Volts AC



WAVEFORMS
MODELS A-20, C-5

WAVEFORMS
MODELS A-20, C-5

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Waveforms PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Pre-Amplifier	12AX7	12AX7	9A	
V2	AF Amplifier	12AX7	12AX7	9A	
V3	AF Amplifier Phase Inverter	12AX7	12AX7	9A	
V4A	Audio Output	5881	5881	7S	
B	Audio Output	6L6GA	6L6GA	7S	
V5A	Audio Output	5881	5831	7S	
B	Audio Output	6L6GA	6L6GA	7S	
V6	Rectifier	5V4G	5V4GA	5L	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

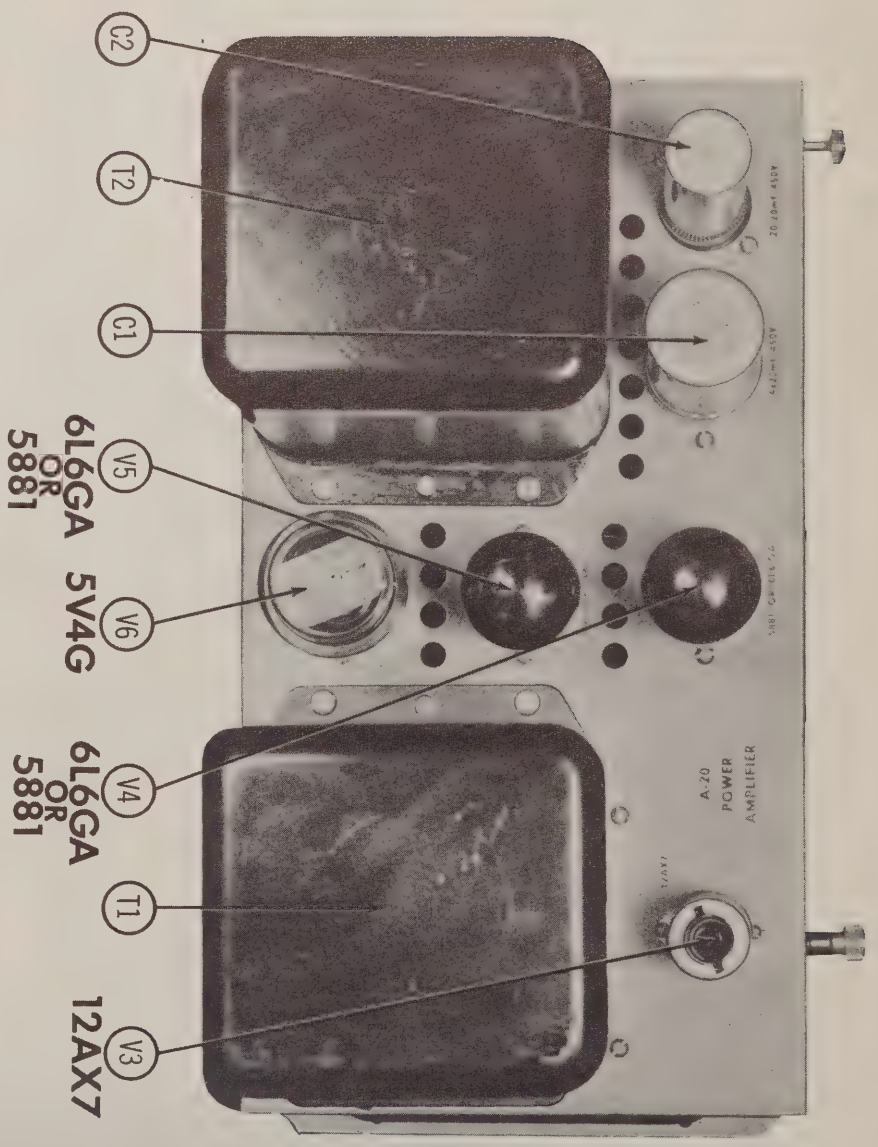
ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: Waveforms PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲20	450		AFH4-14		UPT2222-45		FP444	TVL-4763	
B	■20	450								
C	▲20	450								
D	20	450								
C2A	■20	450		AFH2-51		UP2245		FP234	TVL-2755	
B	▲20	450								
C3	25	25		PRS25/25		BR252A		TC26	TVA-1205	
C4	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C5	150	500		1479-00015		5R5T15		MCB236		
C6	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C7	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C8	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C9	1500	500		1464-0015		1R5D15		MCB456		
C10	1500	500		1464-0015		1R5D15		MCB456		
C11A	■10	450		AFH3-125		UP1145C		FP345.2	TVL-3731	
B	▲10	450								
C	20	25								
C12	.02	400		P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C13	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C14	.015	400		P488-015		PTE6S15		TP400	6TM-S15	
C15	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C16	.02	400		P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C17	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C18	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C19	2000	500		1467-002	D6-202	1W5D2	GP2-333-202	MC457	1FM-22	
C20	2000	500		1467-002	D6-202	1W5D2	GP2-333-202	MC457	1FM-22	
C21	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S5	
C22	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C23	2000	500		1467-002	D6-202	1W5D2	GP2-333-202	MC457	1FM-22	Note 1
C24	.02	400		P488-02	DF-203	PTE4S2		PT412	4TM-S2	Note 1
C25	200	500		1468- 0002	D6-201	5W5T2	GP2K-201	MC237	1FM-32	
C26	1500	500		1464-0015		1R5D15		MCB456		
C27	47	500		1469-00005		5R5Q5		MCB225	MS-45	
C28	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C29	3600	500								Note 2

Note 1. Some Models reverse C23 and C24.
Note 2. Some Models use 3500MMF in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: Waveforms PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½		Q13-133	AG-60-Z	B-60-S	U-48	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch			76-1	SWB	Not Req.	US-26	Attach to R1A
R2A	1Meg	½		Q13-137	AG-63-Z	B-70	U-53	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	1Meg	½		Q13-137	AG-63-Z	B-70	U-53	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A
R4A	500KΩ	½		Q11-133	AG-58-S	AB-59	SU-50	Input #1 Volume
B	Shaft			Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R4A
R5A	500KΩ	½		Q11-133	AG-58-S	AB-59	SU-50	Input #2 Volume
B	Shaft			Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	500KΩ	½		Q11-133	AG-58-S	AB-59	SU-50	Radio Volume
B	Shaft			Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	500KΩ	½		Q11-133	AG-58-S	AB-59	SU-50	Phono Volume
B	Shaft			Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R7A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Waveforms PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R8	3Meg	1/2			Note 1
R9	560Ω	1/2		BTS-560	
R10	10KΩ	1/2		BTS-10K	
R11	470KΩ	1/2		BTS-470K	
R12	1000Ω	1/2		BTS-1000	
R13	2200Ω	1/2		BTS-2200	
R14	100KΩ	1/2		BTS-100K	
R15	100KΩ	1/2		BTS-100K	
R16	27KΩ	1/2		BTS-27K	
R17	56KΩ	1/2		BTS-56K	Note 9
R18	100KΩ	1/2		BTS-100K	
R19	10KΩ	1/2		BTS-10K	
R20	1500Ω	1/2		BTS-1500	
R21	27KΩ	1/2		BTS-27K	Note 2
R22	47KΩ	1/2		BTS-47K	
R23	4700Ω	1/2		BTS-4700	
R24	100KΩ	1/2		BTS-100K	
R25	390KΩ	1/2		BTS-390K	
R26	1.5Meg	1/2		BTS-1.5Meg	
R27	390KΩ	1/2		BTS-390K	
R28	2200Ω	1/2		BTS-2200	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Waveforms PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R29	100KΩ	1/2		BTS-100K	
R30	10KΩ	1/2		BTS-10K	
R31	82Ω	1/2		BTS-82	Note 3
R32	3Meg	1/2			Note 4
R33	3300Ω	1/2		BTS-3300	
R34	390KΩ	1/2		BTS-390K	
R35	3300Ω	1/2		BTS-3300	
R36	330Ω	1/2		BTS-330	
R37	10KΩ	1/2		BTS-10K	Note 5
R38	3Meg	1/2			Note 4
R39	2200Ω	1/2		BTS-2200	
R40	100KΩ	1/2		BTS-100K	
R41	100KΩ	1/2		BTS-100K	
R42	270KΩ	1/2		BTS-270K	
R43	100Ω	5		1 3/4A-100	Note 6
R44	270KΩ	1/2		BTS-270K	
R45	3300Ω	1/2		BTS-3300	Note 7
R46	125Ω	5		1 3/4A-125	
R47	125Ω	5		1 3/4A-125	
R48	5600Ω	1		BTA-5600	Note 8
R49	5600Ω	1		BTA-5600	Note 8

Note 1. Some Models may use a 2.2Meg resistor in this application
Note 2. Some Models may use a 33KΩ resistor in this application
Note 3. Some Models may use 100Ω resistor in this application
Note 4. Some Models may use 2Meg resistor in this application
Note 5. Some Models may use a 8200Ω resistor in this application
Note 6. Some Models may use 125Ω resistor in this application
Note 7. Some Models may use 3600Ω resistor in this application
Note 8. Some Models may use 4700Ω resistor in this application
Note 9. Some Models may use 68KΩ resistor in this application

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA Waveforms PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	REPLACEMENT DATA TRIAD PART No.
T1	117VAC @ 1.12A	740VCT .150ADC	5VAC @ 3A	6.3VCT @ 4A SEC 4 6.3VAC @ 1A		P-8170 ①		PCC-150	

① Drill new mtg. holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA Waveforms PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA CHICAGO PART No.	REPLACEMENT DATA TRIAD PART No.	NOTES
T2	6KΩCT	600Ω tap @ 16Ω, 8Ω, 4Ω	218Ω CT	27Ω tap @ .71Ω, .52Ω .39Ω SEC. 2 23Ω				PCO-200		The original unit has an additional 150Ω tap which is not used.

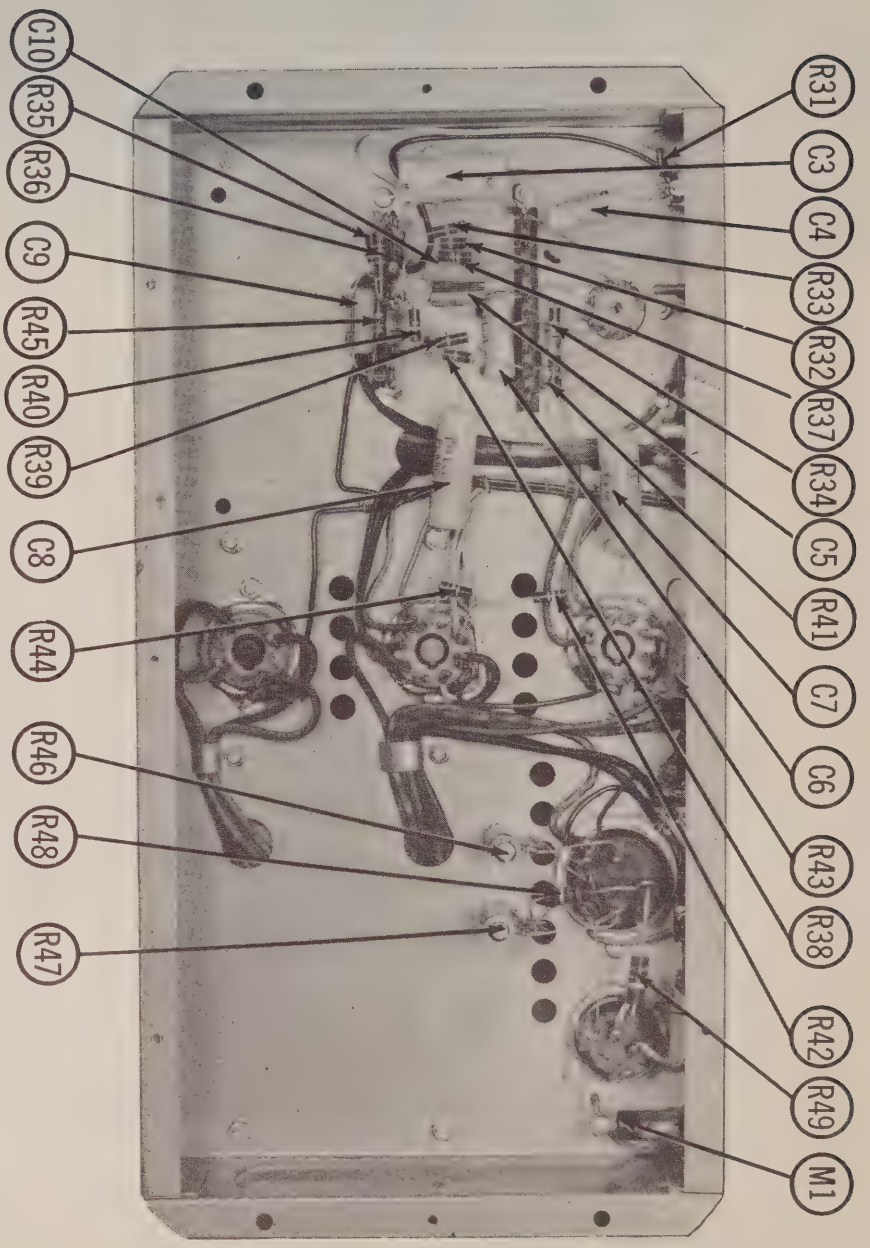
FUSES

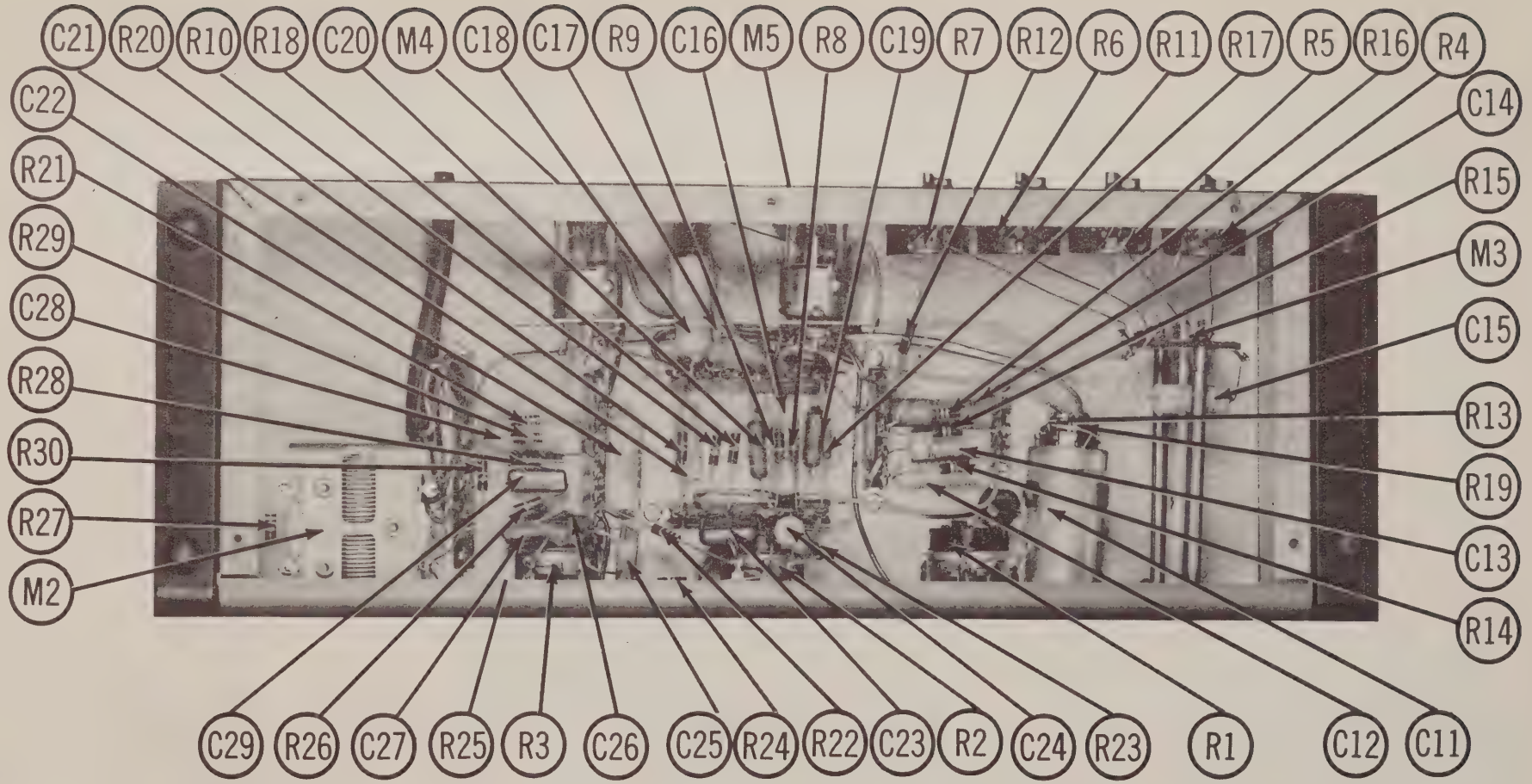
ITEM No.	TYPE	RATING	REPLACEMENT DATA Waveforms PART No. FUSE	Waveforms PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	3A, 250V			312003	342001	AGC-3	HKP

MISCELLANEOUS

ITEM No.	PART NAME	Waveforms PART No.	NOTES
M2	Variable capacitor		Treble cutoff, 2 gang; 450MMF, 450MMF
M3	Switch		Input selector, (SP4T rotary)
M4	Switch		Tone compensator,(DPST slide.)
M5	Switch		Turnover selector,(SPST slide.)

CHASSIS—BOTTOM VIEW




C21
R20
R10
R18
C20
M4
C18
C17
R9
C16
M5
R8
C19
R7
R12
R6
R11
R17
R5
R16
R4
C22
R21
R29
C28
R28
R30
R27
M2
C14
R15
M3
C15
R13
R19
C13
R14
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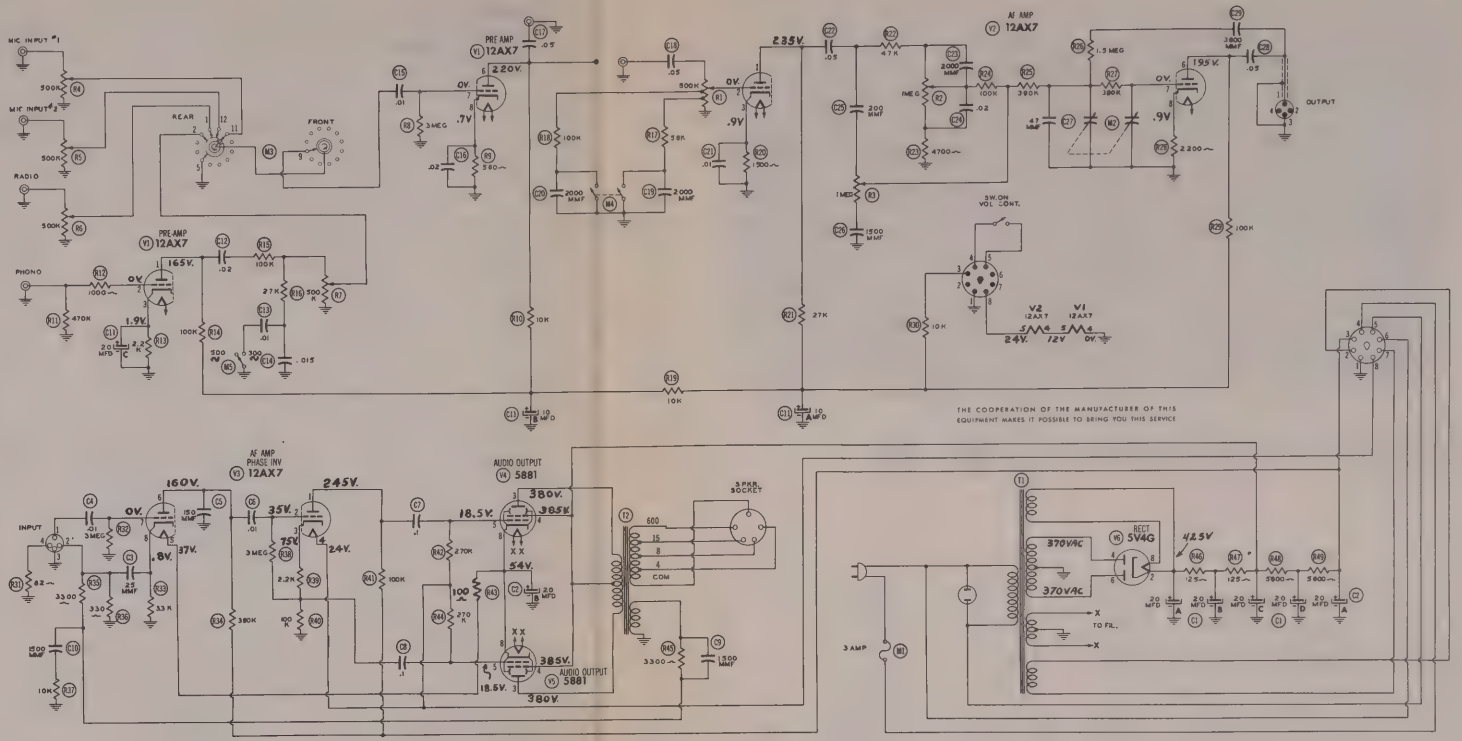
R23
R1
C12
C11



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12AX7	†131KΩ	471KΩ	2.2KΩ	0Ω	13.5Ω	†41KΩ	3Meg	560Ω
V 2	12AX7	†48KΩ	20Ω	1.5KΩ	13.5Ω	27Ω	†121KΩ	880KΩ	2.2KΩ
V 3	12AX7	†111KΩ	3.1Meg	102KΩ	27Ω	39Ω	401KΩ	3Meg	3.3KΩ
V 4	5881	0Ω	.1Ω	†361Ω	†250Ω	270KΩ	39Ω	.1Ω	139Ω
V 5	5881	0Ω	.1Ω	†357Ω	†250Ω	270KΩ	27Ω	.1Ω	139Ω
V 6	5V4G	INF	550KΩ	INF	43.8Ω	INF	48Ω	INF	550KΩ

† MEASURED FROM PIN 8 OF V6.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected.

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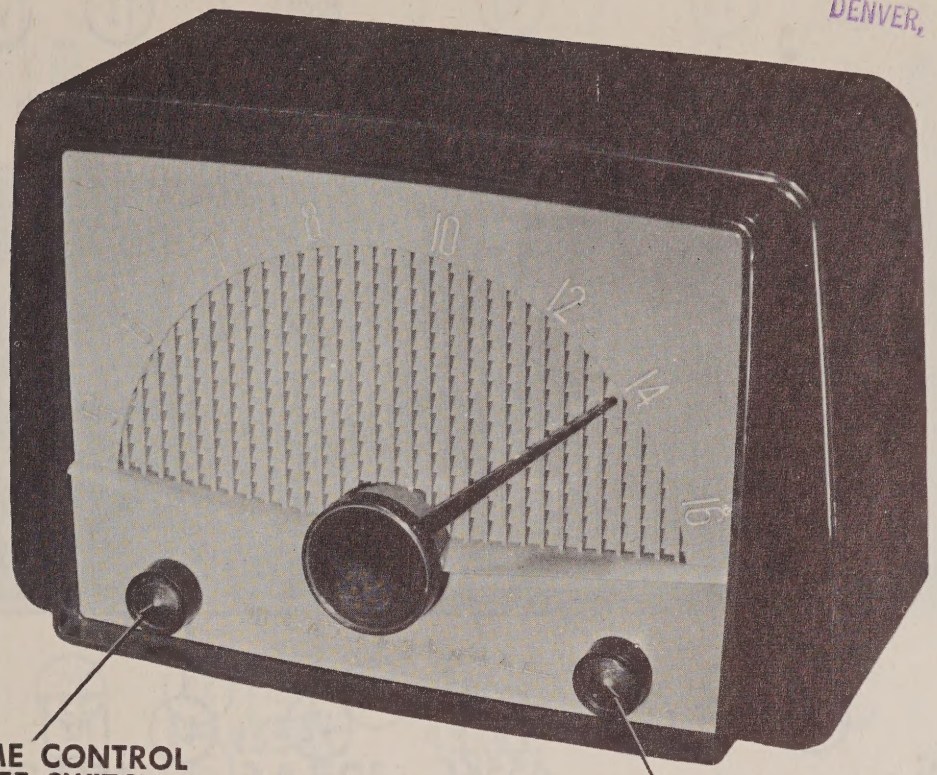
WESTINGHOUSE MODELS H-359T5, H-360T5 (Ch. V-2157-6)

OF
3924 MEADE ST.
DENVER, COLORADO

WESTINGHOUSE MODELS
H-359T5, H-360T5 (Ch. V-2157-6)



WESTINGHOUSE MODELS
H-359T5, H-360T5 (Ch. V-2157-6)

WESTINGHOUSE MODEL H-359T5

TRADE NAME	Westinghouse Models H-359T5, H-360T5 (Ch. V-2157-6)
MANUFACTURER	Westinghouse Electric Corp., Television-Radio Div., Sunbury, Pa.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC/DC RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1615 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position . Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator of rear section of tuning gang. Low side to B-.	455 KC (400∿ Mod)	Tuning gang fully open	Across voice coil	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1615 KC	"	"	A5	"
3.		Loop	1400 KC	Tune to 1400 KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

WESTINGHOUSE
MODEL H-359T5 (Ch. V-2157-6)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Westinghouse PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det. -AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	V-9991	PRS150/50-50		BRD5515A		TCD49	TVA-2453	
B	50	150								
C2	.05	200	RCP10W2503M	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C4A	220									
B	.002									
C	.005		♦V-10789-1		♦PC-150		♦1408-01		♦103C4	
D	250									
E										
C5	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C6	.047	400	V-10157-4473M	489ZGXY-05		PJ4S47		PT4147	4TM-S47	
C7	.05	400	RCP10W4503M	P488-05		PTE4S5		PT415	4TM-S5	

♦ Items C4A, C4B, C4C, C4D, C4E, R6A, R6B, R6C are combined in one unit. When replacing items separately, C4D and C4E should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	Westinghouse PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	V-9993-4	Q19-133X	AK-82	BTSK-67-S	UT-430	Volume - Tapped @ 200KΩ
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A.
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	Westinghouse PART No.	IRC PART No.	NOTES
R2	22KΩ	½	RC20AF223M	BTS-22K	
R3	3.3Meg	½	RC20AE335M	BTS-3.3Meg	
R4	68Ω	½	RC20AE680M		
R5	22KΩ	½	RC20AE223M	BTS-22K	
R6A	6.8Meg	½		BTS-6.8Meg	
B	470KΩ	½	■V-10789-1	BTS-470K	
C	470KΩ	½		BTS-470K	

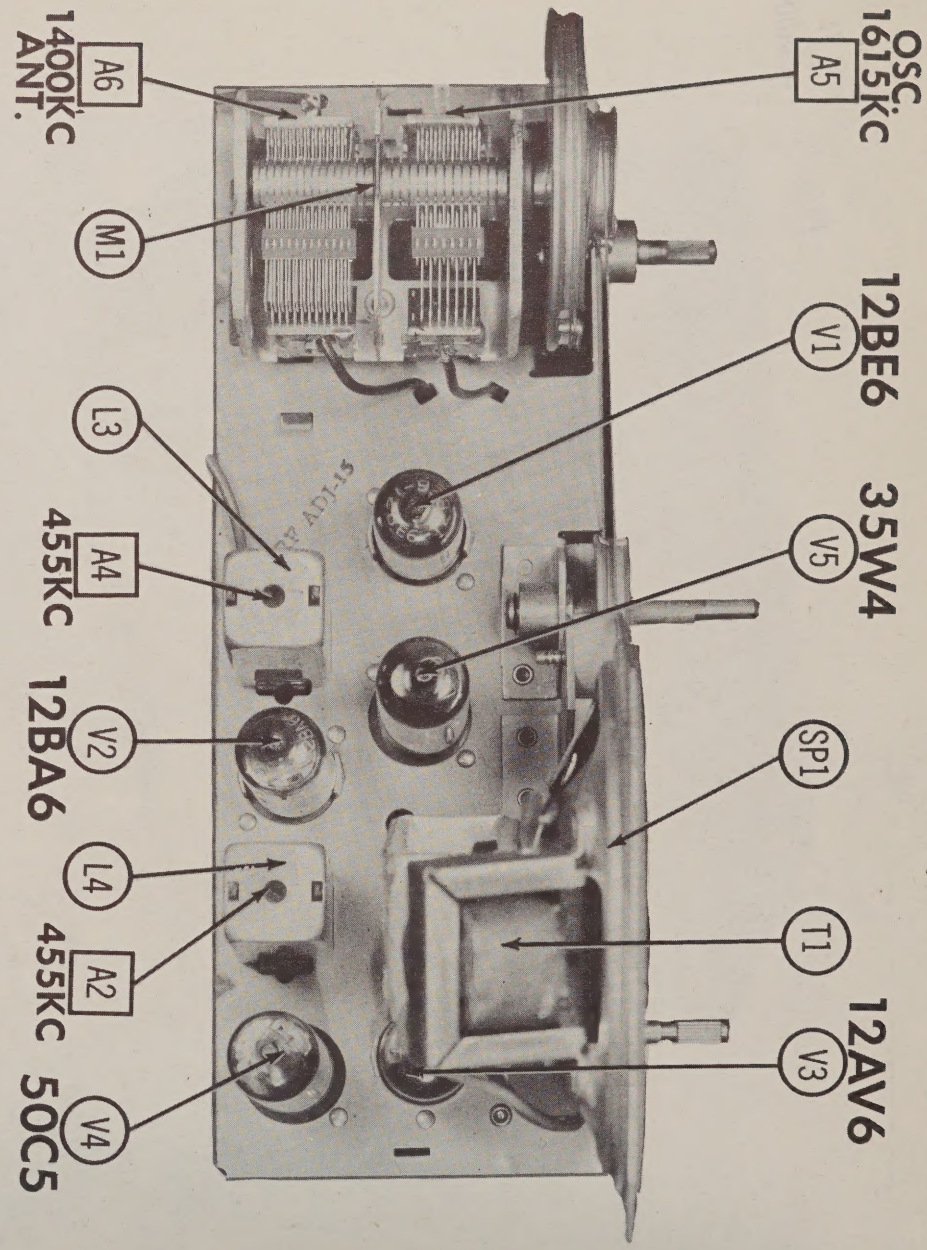
ITEM No.	RATING: OHMS	RATING: WATT	Westinghouse PART No.	IRC PART No.	NOTES
R7	150Ω	½	RC20AE151M	BTS-150	
R8	1000Ω	1	RC30AE102M	BTA-1000	
R9	22Ω	1	RC30AE220M		

■ Items R6A, R6B, R6C, C4A, C4B, C4C, C4D, C4E are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2KΩ	3Ω	250Ω	.7Ω	V-9727-2	A-3332	A-3025	RO-2 ①	S-2X ①	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

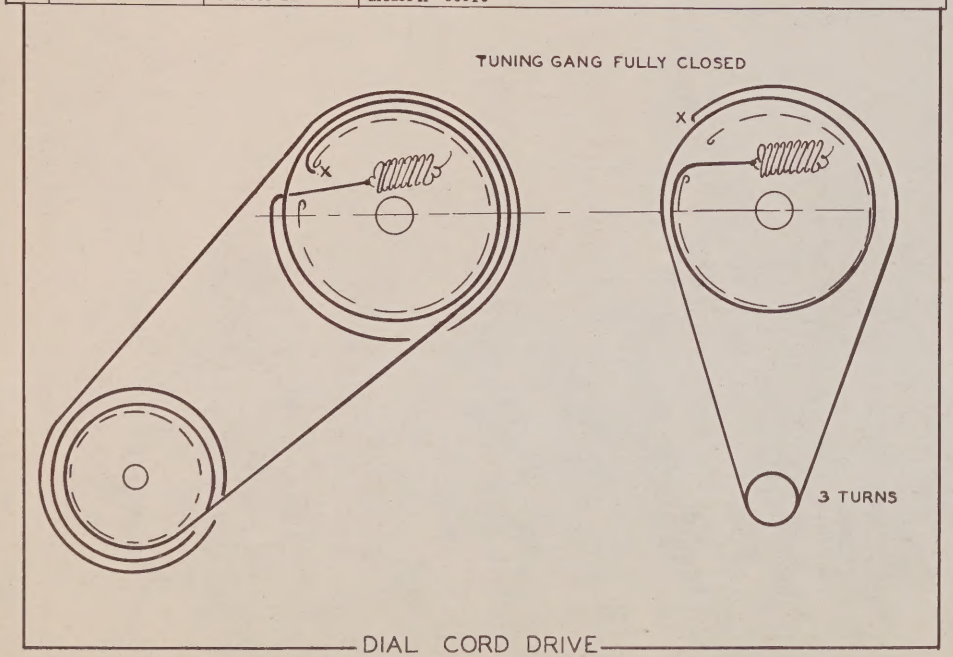
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Westinghouse PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3Ω	Part of V-9727-2	ST-112 Mod. P4-X	4A07	

COILS (RF-IF)

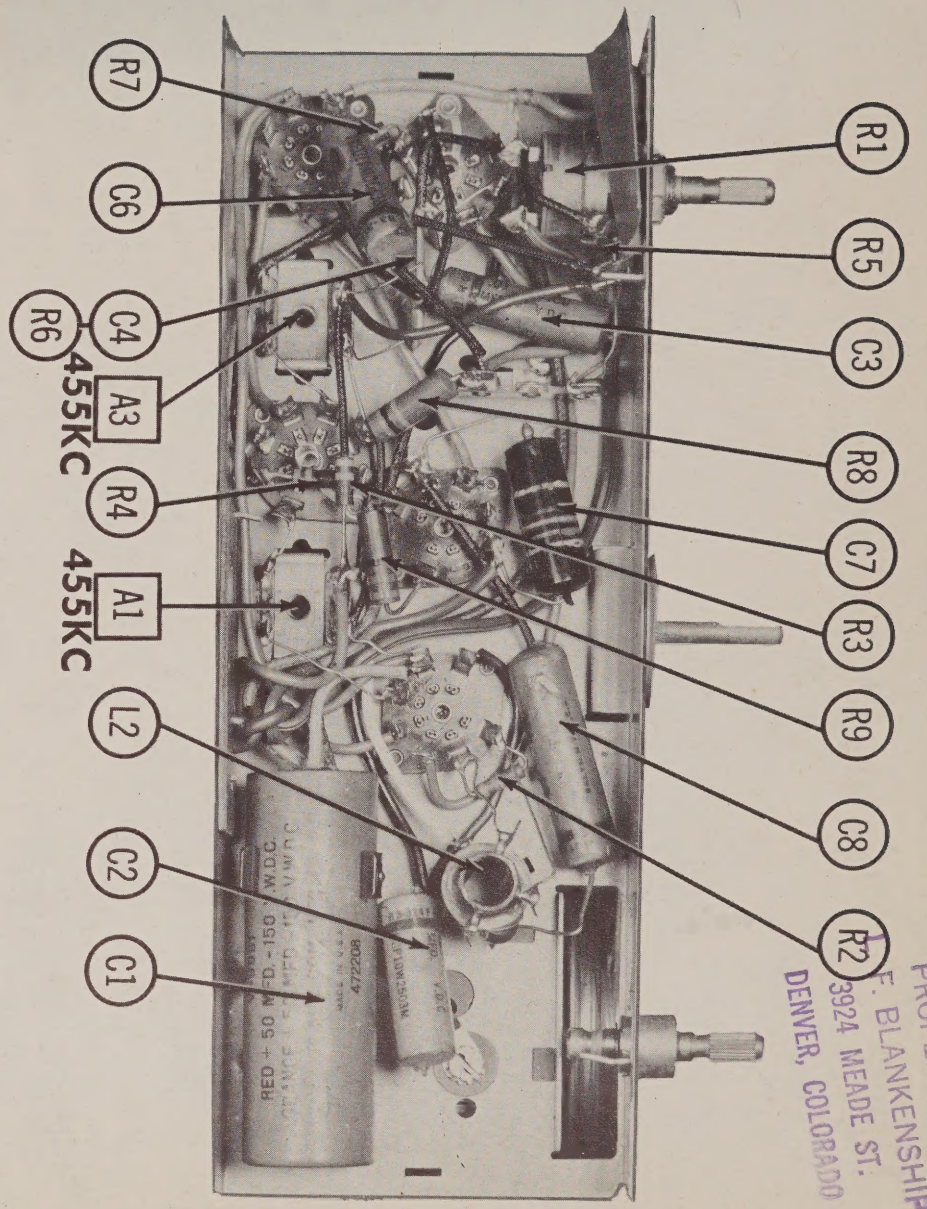
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Westinghouse PART No.	MERIT PART No.	
L1	Loop Ant.	3.4Ω		V-10001-1		
L2	Osc. Coil	.8Ω	11.5Ω	V-9992		
L3	Input IF	17Ω	17Ω	V-10945-1	BC-352	
L4	Output IF	17Ω	17Ω	V-10945-1	BC-353	

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M1	Tuning Capacitor	V-10895-1	22-380MMF, 20-110MMF
	Cabinet	V-1220-3	Ivory, Model H-360T5 (less front grille)
	Cabinet	V-1220-4	Brown, Model H-359T5 (less front grille)
	Grille, front	V-10894- 2	Model H-360T5
	Grille, front	V-10894-1	Model H-359T5
	Knob	V-10009-13	Model H-360T5 (2 Used)
	Knob	V-10009-15	Model H-359T5 (2 Used)
	Pointer	V-10893-1	Model H-359T5
	Pointer	V-10893-2	Model H- 360T5



CHASSIS—BOTTOM VIEW



PROPERTY OF
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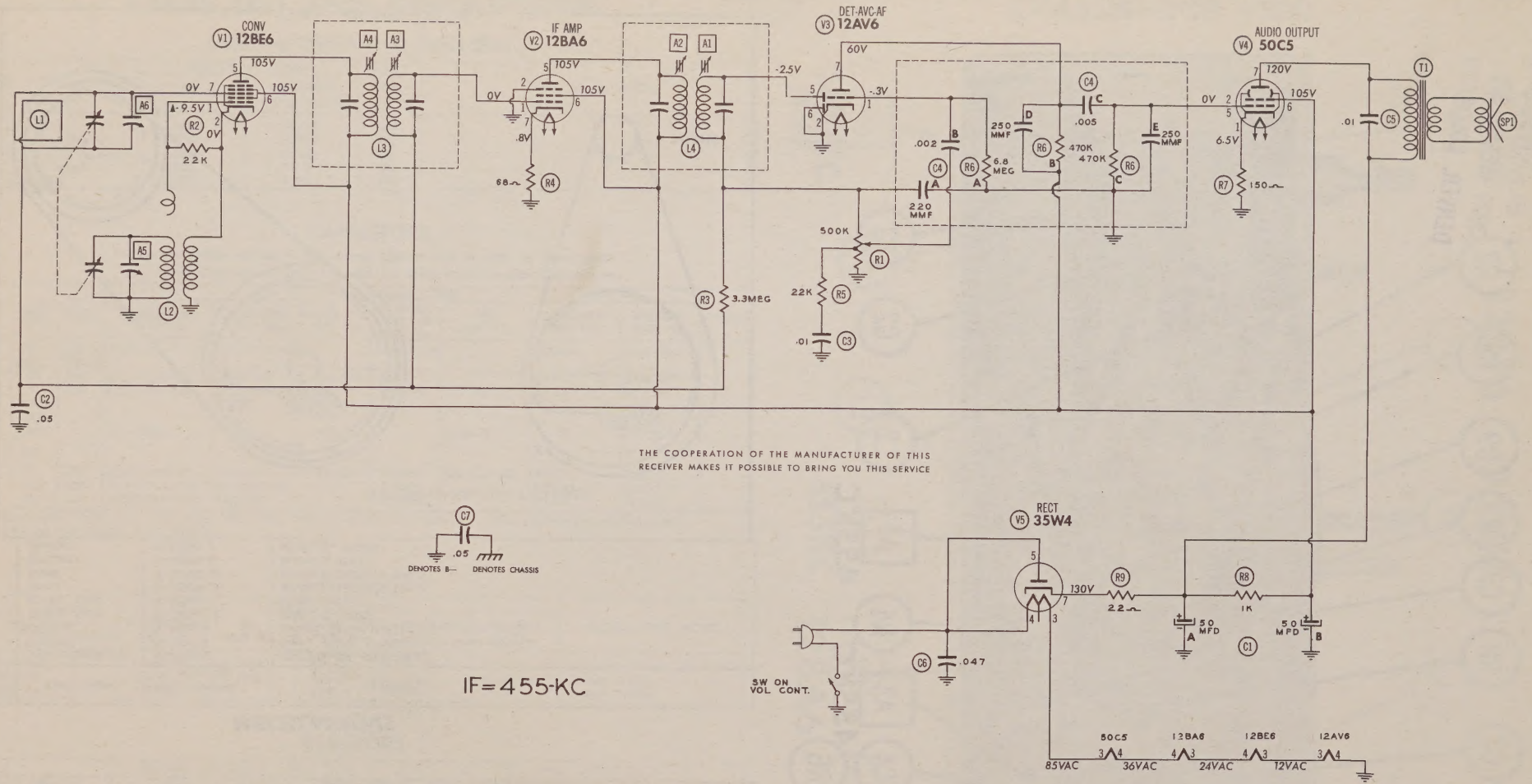
3924 MEADE ST.
DENVER, COLORADO

WESTINGHOUSE
MODEL H-359T5 (Ch. V-2157-6)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.8Ω	12Ω	24Ω	† 1KΩ	† 1KΩ	3.8Meg
V 2	12BA6	3.3 Meg	0Ω	24Ω	36Ω	† 1KΩ	† 1KΩ	68Ω
V 3	12AV6	6.8 Meg	0Ω	12Ω	0Ω	500KΩ	0Ω	† 470KΩ
V 4	50C5	150Ω	470KΩ	86Ω	36Ω	470KΩ	† 1KΩ	† 272Ω
V 5	35W4	† 22Ω	0Ω	86Ω	121Ω	121Ω	116Ω	300KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 7, V5.

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.